Bristol and Bath by Design

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BRISTOL + BATH × DESIGN

Final Report
November 2016

Challenge:
To understand the economic and cultural value of design in the Bristol and Bath region.

BRISTOL+
BATH×
DESIGN

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Executive Summary

Why we were selected

The AHRC and the Design Council have been working together over the last four years to understand how design plays a key role in creating economic benefits and social value in the UK. They want to explore design research in UK universities and its connections with businesses and policymakers.

Bristol and Bath were identified as a thriving area for design and as two of the nine 'creative hotspots' across Britain in the 2010 NESTA *Creative Clusters and Innovation* report. Since then, the local city councils and the West of England Local Enterprise Partnership have been keen to support and develop the growth of related key sectors, including creative and media, advanced engineering and micro-electronics and silicon design.

The team

As a project team we are highly cross-disciplinary, bringing together researchers and expertise from UWE Bristol, Bath Spa University, and University of Bristol. We have worked with key regional partners, the West of England Design Forum, Bristol Media, Creative Bath, the West of England Local Enterprise Partnership and the REACT Hub.

The aims

For this project, design is considered in its broadest field, with a particular focus on six key sectors for which the Bristol and Bath region is known:

+ Engineering, aerospace, product and package design
+ Multidisciplinary design studios
+ Applied designer-maker studios
+ Content: animation, motion graphics, television/film and publishing
+ Fashion and textiles
+ Architecture, heritage and landscape design

The aim of the project was to collect data on design companies in the Bristol and Bath region, and to gain a better understanding of the economic and cultural value of the design-led sector. To do this, our primary research was to develop a range of qualitative and quantitative methods that could gather and then analyse the data.

Why mapping and understanding design is important

Design has never been properly mapped or measured. The Bristol & Bath by Design project [BBxD] contributes to understanding about design and the different types of values it can bring.

At a **regional level** design is integral to economic activity. It is important for policy makers to understand why design companies are here. According to the 2015 Bristol Media Barometer, over 13% of Bristol's business units are in the creative sector. Bath has more creative enterprises per capita than any other area in the South-West, with 57% more people employed in the creative sector then the national average.

Much of the design sector is hidden. It is important to map design in the region, to demonstrate the networks and clusters of activity. By mapping and evaluating design-led enterprises, we can gain a better understanding of the value of inter-regional co-operation in the sector. These transferable methodologies can be used to understand and evaluate the impact of the design sector in any region.

From a **national** perspective, we can understand the contribution the region is making to the UK economy. It is clear design plays a major role in the flow of capital into the UK. Company and national competitiveness is today inextricably linked with design. In addition to the financial benefits the UK makes many recognizable products, services, artefacts, and BBxD provides an understanding of the source of UK design that contributes to an international export of which we can feel proud.

Executive Summary

Our methods

The objective was to capture and understand economic and cultural value in the Bristol and Bath region. Our multidisciplinary methods sought to gain a holistic understanding as to why designers chose Bristol and Bath, how and where they worked, their connections across the region, and what they needed to grow their business. We used a combination of quantitative and qualitative methods:

+ We used statistical analysis and data mining. Using SIC codes for the design industry, we collected financial data from the UK's Office for National Statistics [ONS].
+ Using wide-ranging keywords relating to design activity, we searched for design companies on the Internet using BS and BA postcodes. We collected over 3300 company names, postcodes, and their website addresses.
+ We used primary sources from museum collections and made a detailed literature review and survey of the history of design in the Bristol and Bath region. We made a contextual survey of contemporary design activity and research from around the world.
+ We interviewed and recorded designers through in-depth online and telephone surveys, focus groups, social events and semi-structured interviews.
+ To interrogate the interview and survey data we used Importance-Performance Analysis (IPA) and an Enterprise Imaging (EI) technique.
+ From the data collected during the interviews and history survey, we developed different visualisation methods.
+ Using the data mining from the Internet, we created an interactive software app that plots the design activities across the region, subject specialism and place of work.

Why is our research different

We have studied the value of design through the combined efforts of academics from disciplines including design, art, history, creative industries, engineering, economics and management strategy.

We have undertaken in-depth conversations with design companies (from engineering to illustration). We have used Enterprise Imaging to demonstrate the complexity of the design network. The success of Enterprise Imaging as a tool to engage and capture information about design firms has led to substantial data that was not anticipated in the original application.

The methodological approach has allowed us to organise and translate qualitative into quantitative data. The project is innovative in the development of transferable methodologies to evaluate the impact of design in any region.

Visualising data is a powerful tool that is more compelling than text. In order to convert our data, we have worked with designers on a range of info-graphics, website and interactive software app that maps designers working in this region. We consider these visualization methods to be a very important component of the methodology.

There is no specific literature on the history of design in the Bristol & Bath region. Our extensive historical survey has described a clear social and historical context for the region, which demonstrates the richness and diversity of design in its broadest sense. The history goes beyond a literature review. It entailed a review of literature in support of primary research in museums, libraries, archives, galleries and other collections, as well as numerous meetings with historians and curators.

The history timeline demonstrates key points in the last century, the impact of government policies, changes in government, roads and infrastructure, the arrival of key industries, and charts how this has profoundly impacted on the region's economy and activity.

We have found

1. Our research has shown that a great deal of design work in the region is under-appreciated, unacknowledged, or 'hidden'.

2. Design-led companies **in the region** have **increased levels of productivity**. Design-led companies based in the Bristol and Bath region have 3-5% higher turnover than the average design companies elsewhere in England and Wales. Small design firms in the Bristol and Bath region are 14% more productive than the average small non-design company and 3% more productive than average small design-led companies across England and Wales.

3. Enterprise Images show that designers and design companies are not creating goods and services in isolation, but are working in relationship with a number of regional and non-regional companies and individuals to co-create **economic and cultural value**.

4. Across all sectors, designers cited the regional **network** of flexible, highly-skilled companies and individuals that can be relied upon to deliver a project, as well as a **strong community** of people that are open to ideas and ventures, as key reasons for success and for remaining in the region.

5. **Our design ecosystem** demonstrates that while private companies and freelancers are the primary part of the ecosystem, other public bodies and organisations play a vital role in facilitating and supporting the design sector. They are: education, public sector and not-for-profit; essential for **providing space, sharing experiences and ideas, for connecting designers with collaborators and clients** and as beacons to promote and attract designers to the region.

6. **Design is integral** to a **diversity** of commercial activity in the region in its role as a process for creativity, innovation and problem solving, as means of communication, and in the value it adds to the experience of the consumer.

7. The long **history of design** in the region shapes the character of present-day design enterprise: from the woollen trade in the middle ages leading to pioneering experiments at the beginning of aviation, resulting in a regional specialism in aerospace and the high-tech industries. Concurrent to these activities are the artisan and craft industries that have always been present throughout the centuries as demonstrated by the long histories of Bristol and Bath schools of art and design.

8. **Good design changes societies' perceptions**. Design makes an important contribution to lifestyle as demonstrated by positive regional exemplars (e.g. Cameron Balloons, Wallace and Gromit, Brunel's suspension bridge in Bristol, and the Georgian architecture of Bath).

Our recommendations

Our recommendations are based on what designers have told us from interviews, surveys and workshops, and which are supported by economic data.

Our primary recommendations are around growth, identity and access, as without these key components, nothing else can take place. Central to the delivery, all stakeholders in the region (not-for-profit, higher education, public, private) need to work together to support the design network. Decisions about how we move forward cannot be undertaken by one group alone. We also need ambassadors who are advocates for the region and for design.

Most importantly, many design companies said they wished to stay small and remain agile. Therefore to grow design in the region it is also necessary to think about growing the network of designers rather than turning SMEs into large companies.

RECOMMENDATION FOR IMMEDIATE ACTION

One recommendation, that is feasible and would make an immediate impact:

Hold an international design festival in the region

This would:

+ Raise the identity of the region as a place for design and demonstrates that the quality of the work is of international standing.
+ Serve as a beacon/attractor for designers, design companies and clients.
+ Show the region as a place that has guaranteed expertise, knowledge, innovation and creativity.
+ Be a creative stimulus for design companies who are working here and an opportunity to showcase what they do.
+ Allow the region to stand alongside other UK cites currently hosting design festivals.

It is essential that all stakeholders in design - businesses, not- for-profits, universities, LEPs and local authorities - come together to make this happen.

LONGER-TERM RECOMMENDATIONS

In the medium and long term we recommend activity that would have wide reaching benefits and sustain design in the region.

Question definitions of growth

To increase the economic value of design across the region there needs to be recognition that many design companies wish to stay small to remain agile. To grow design in the region it is necessary to think about growing the network of designers rather than turning SMEs into large companies. Regional and national policy should consider how this might be supported.

Design beacons and ambassadors

Design needs regional champions who will advocate for design and provide a focus for promoting the region's identity. Exemplars of outstanding practice, often overlooked or not publicised, should be identified and ways found to involve them in raising the profile of the region. Universities should be encouraged to be more pro-active and involved in design activity. The high quality of design higher education should be supported to ensure a flow of new talent to the region.

Affordable space

Provision of affordable, centrally located creative workspaces is a priority. Allied with this is support for and recognition of the value of social and exhibition spaces in which designers can meet clients and collaborators.

Open access

The industry should consider the openness of its current practices to new and inexperienced arrivals. Design networks should be more visible, open and accessible to a diverse range of designers and clients. The region has good diversity of skills and markets, but there is a lack of cultural diversity in the backgrounds of individual designers. Out-reach to schools and colleges in order to improve the diversity of design professionals needs to be properly co-ordinated and not solely the responsibility of the private or education sector.

Business support

Provision of business support in the form of mentorship schemes delivered by not-for-profit organisations, tax relief, and support for small levels of growth.

Connectivity

Central to the delivery of growth is greater connectivity and collaboration among higher education, private, public and not-for-profit organisations. They need to work together to support the design network.

Ensuring high-speed internet and a good transport system to keep designers connected within the region and in contact with the rest of the world.

Co-ordination

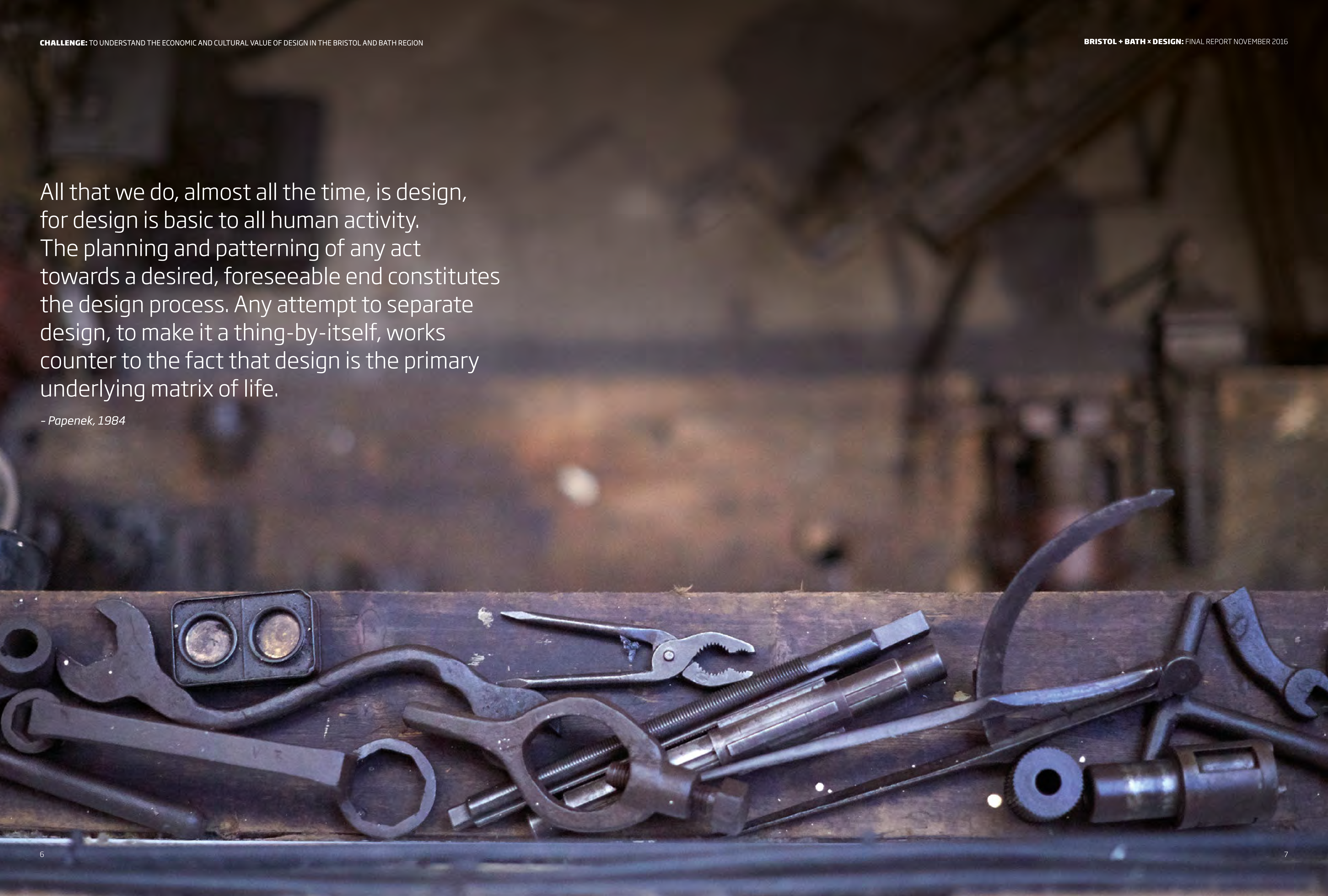
Identification of and funding for a way to co-ordinate activity to support and develop design in the region. All agencies in the region need to co-operate in achieving this.

Create a design district

Identify areas of design activity that can highlight commercial enterprises, can increase business and tourism and enrich an area. Create a coherent image for this and promote it within and beyond the region.

The establishment of design hubs

These should provide affordable workspace, educational spaces, social and exhibition spaces. Design hubs would act as beacons for design in the region, as well as providing creative stimulation and network support. They could be an important element in a Design District.



All that we do, almost all the time, is design, for design is basic to all human activity. The planning and patterning of any act towards a desired, foreseeable end constitutes the design process. Any attempt to separate design, to make it a thing-by-itself, works counter to the fact that design is the primary underlying matrix of life.

– Papenek, 1984

Introduction

In recent years, design has again emerged as a major topic of interest. Though it is evident as a practice throughout all of human history, it matters now more than ever. Stakeholders in many countries are now beginning to recognise the role of design in a highly inter-connected and competitive global economy. Why it matters is complex because although there is a growing desire to understand the significant value that design can add to objects, places and organisations, design is driven by more than just an economic benefit.

Design is everywhere. We interact, use and benefit from design on a second by second basis. Design is at the core of our UK economy in that almost every organisation incorporates some element of the design function. Design is complex and nuanced. It is multi-faceted and bridges different disciplines. It is embedded in our society, in our history and culture. All of this understanding makes it difficult both to extract and understand the 'value' of 'design'. How can we articulate and apply a value to design when it is so deeply ingrained in our lives and in the very fabric of our environment?

Wrestling with the complexity of this question, finding ways provide valid and useful answers have occupied this two-year project, which has been funded by the Arts and Humanities Research Council (AHRC) and Design Council.

Our brief was to understand and articulate the economic and cultural value of design in the Bristol and Bath region. Our interpretation of 'design' in this context includes the range of design-related jobs, beyond the 'creative industries', how designers and their stakeholders are connected and why they are attracted to the region.

Beyond their economic value, we recognised that design is inextricably connected to the social and cultural landscapes of cities, regions and countries. The project is geographically determined in its focus on the Bristol and Bath region. We needed to understand the relationship of people and place to the design process. We also know that historical change connected to industrial development and urban regeneration, new approaches to policy can drive and be driven by design. If we were to truly understand value and impact, our research design and methods needed to cross disciplines and our approach had to be holistic and integrative.

In order to begin the long-term process of measuring and mapping the value and impact of design at a regional level we decided on a broad definition of design: one that encompasses sectors within and beyond the creative and high-tech economies. Our survey of past and current research into the area led to the understanding that measuring the value of design cannot be undertaken solely by collecting statistical economic data. To understand the true value of design to a region or a country social, cultural and historical perspectives also need to be captured, the context must be considered, human histories and motivations taken into account.

We have used conventional quantitative and qualitative methods, evaluating each as we proceeded, and also adopting others which were more innovative and experimental.

Our approach to the research was exploratory and cumulative, changing and developing as new insights and new knowledge emerged. We are confident that the methods we have used, both to inform and to communicate our findings, are transferable and will be useful for anyone who wishes to understand the value that design brings to their region, city or company.

Design matters because it is important to the economy but it has an impact and value beyond quantitative measure. It is now more necessary than ever to know the industry. As the discussion of our findings shows, we are hopeful that Bristol & Bath by Design has created knowledge and raised questions that will contribute to sustaining and developing design in this and other regions.

THE RESEARCH AND INVESTIGATIVE TEAM

UWE Bristol

+ Professor Jon Dovey (REACT)
+ Jess Hoare
+ Professor Stephen Hoskins (Centre for Fine Print Research)
+ Ellen Hughes
+ Verity Lewis
+ Dr Pei-Ling Liao
+ Dr Aaron Mo
+ Adrienne Noonan (School of Art and Design)
+ Professor Carinna Parraman (Centre for Fine Print Research)
+ Dr Glenn Parry (Faculty of Business & Law)
+ Professor Don Webber (Bristol Business School)

Bath Spa University (Bath School of Art and Design)

+ Dr Graham McLaren
+ Dr Kayla Rose
+ Professor Anita Taylor

University of Bristol

+ Professor Chris McMahon (Department of Mechanical Engineering)

Why is this Important?

Understanding the context in which it is working in is an essential first step for any research enquiry. We started by looking at the many sources of information about the nature and growth of the UK's creative and high-tech industries and on the value and impact of design, at the national and regional level.

It is important to highlight here that our study has considered a much wider understanding of design, as listed in the following six key sectors:

+ Engineering, aerospace, product and package design
+ Multidisciplinary design studios
+ Applied designer-maker studios
+ Content: animation, motion graphics, television/film and publishing
+ Fashion and textiles
+ Architecture, heritage and landscape design

UK Creative Industries 2014
£84.1 billion Gross Value Added (GVA)
5.2% of the UK Economy
Sector Growth 8.9%
UK Growth 4.6%

The *Creative Industries Mapping Document* (DCMS 1998 and 2001) was the first attempt to measure the economic contribution of the creative industries to the wider UK economy. The creative industries were defined as 'those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property'. 'Design' was included as a separate category of activity alongside, for example advertising, architecture, crafts, designer fashion, film and video, music, the performing arts, publishing, software, television and radio, tourism, museums, heritage and sport. It was a long list.

This landmark document recognised that design is integral to economic activity. It is stated that the UK is 'widely regarded as a world leader across all design disciplines' and was the world's top exporter of design in 2000, generating around £1bn. Significantly it also noted that this important activity was dispersed, unco-ordinated and varied. Linked with this, and included in a range of recommendations to encourage growth at national and regional level, was the recognition of a clear need for more mapping of the creative industries, in order to understand their nature and how they function, as well as to inform policy. The document recommended encouraging networking, communication and exchange; strengthening of existing creative clusters along with support for emerging creative clusters; and encouraging the retention of creative talent within regions. These recommendations still resonate today, ranging across publications on creative placemaking, creative and cultural clusters and urban growth and development. They were important in shaping the BBxD project.

The Geography of Creativity (NESTA, 2009) highlighted an increased recognition of the role played by the creative industries in driving innovation and economic growth across the UK. In 2008, the UK government published *Creative Britain*. This set out a comprehensive government strategy to develop and grow the creative industries. Areas for focus included growing creative clusters that would promote the UK as 'the world's creative hub'. Eight years on, government estimates indicate that the creative industries in the UK now consistently outperform other national employment sectors (DCMS, 2016) and contribute significantly to the UK economy. The creative industries are growing and providing more employment year on year. People working in this sector are a dynamic part of the UK economy and numbers have grown over five times faster than for the UK workforce as a whole (Bakhshi *et al.*, 2013). In 2014 one in seventeen of all jobs in the UK were in the creative industries (DCMS, 2015, 6).

It has become clear that understanding design and how it functions within the wider UK economy is essential to continued growth and sustainability.

Why Bristol and Bath?

Approaches to mapping the design industries in the UK have shown them gathering in regional clusters and concentrations. Like the creative economy the UK's design economy is concentrated in London and the South-East, with one in five designers and one in four design-intensive firms found in London. However there are emerging clusters of design in other regions where the number of firms and employment in design is growing. (Design Council, 2015) In the South-West, employment in this sector has been rising rapidly and in 2014 the region was third in the UK for this category of employment, only slightly behind the South-East. The capital and these two regions between them accounted for almost a quarter of UK employment in the creative industries.

The Arts and Humanities Research Council (AHRC) and the Design Council are committed to increasing understanding of this regional variation, of why and how clusters arise, grow and are sustained, of how their value, regionally and nationally, might be articulated. They chose the Bristol and Bath region as the focus for this study because, within the South-West, it is the UK's main purveyor of design activity outside of London and the South East. The range of design activity is varied: although design overall is concentrated in London, the South-West is one of the areas with a higher concentration of product and industrial design. (Design Council, 2015)

At the start of the project, what did we know about the region we are researching? Economic information was not hard to come by. A selection provides a snapshot of the two cities from this perspective. Bristol is the only local authority outside London and the South-East to be in the top ten UK areas for design activity. (Design Council, 2015) According to the 2015 Bristol Media Barometer, over 13% of Bristol's business units are in the creative sector. Bath has more creative enterprises per capita than any other area in the South-West, with 57% more people employed in the creative sector then the national average. According to the West of England LEP (2014), the creative industries provided an estimated 15,900 jobs in the two city region, contributing £660 million GVA to the local economy and showcasing a 106% growth rate in productivity since 1999. In 2013 the Bristol and Bath sub-region accounted for a quarter of the South-West's GVA. In February 2015, the TechNation report ranked Bristol and Bath second only to London in numbers employed in the digital economy (Bristol Media, 2015). There is also an impressive proliferation of creative and high-tech incubators and co-working spaces, such as Engine Shed, SETsquared, Watershed, Pervasive Media Studio, The Guild, The Glove Factory and Bristol Games Hub, as well as several independent creative studios, such as Spike Island, Bath Artists Studios and Jamaica Street Studios.

Looking more widely, the cities are home to four universities, three colleges of further education, a large number of highly rated schools, and the city region has one of the strongest graduate retention rates in the country. In recent years Bristol has sported a number of titles: Green City, Learning City, Smart City. An associated focus on learning, culture and sustainability has led to a great deal of activity including creative and high-tech innovation. While this activity is most clearly centred around the city of Bristol, particularly in specially designated spaces, the city of Bath and the surrounding areas prosper in conjunction with Bristol. The cities share a reputation for good quality of life and people show a real desire to live and work there.

The challenge for Bristol & Bath by Design was to find ways to investigate this complex area. We recognise that design activity is happening in engineering, particularly in the aerospace industry, for which this region has a long history. It was important that we look beyond the creative industries and considered design in its widest definition.

Location of employment in the creative industries

+ **London 11.8%**
+ **South-East 6.7%**
+ **South-West 5.7%**


Bathurst Basin
St. Mary Redcliffe
Arnolfini
Queen Square
At-Bristol
Tourist Information Centre
Centre Promenade
BALMORAL

Research Design and Methods

From the start, as the composition of the research team indicates, this study was conceived as an integrative enterprise: the contributions from different sources and perspectives would challenge and complement each other.

In addition the approach was exploratory and cumulative in that the direction and emphasis of the research changed and developed as new insights and new knowledge emerged.

The research design incorporated a classic combination of quantitative and qualitative methods, with the addition of a library-based historical survey of trade in the region. Statistical analyses would provide a solid quantifiable basis for developing an understanding of economic value. Surveys, interviews and focus groups involving the design firms and the designers themselves, would provide additional quantitative and qualitative information, which, with the historical survey, would enable an evaluation of cultural value.

An inconvenient truth

However, as we knew, design is a complex area. Our research soon faced us with issues to be recognised and managed. The members of our project team experienced in quantitative methods pointed us to an 'inconvenient truth' about the design sector: it does not correspond very well to traditional SIC codes, which underpin classic statistical methods of economic analysis. This strongly called into question whether the standard economics way of estimating productivity truly reflects the success of the design sector in the Bristol and Bath region.

A new emphasis

Together we decided that it was essential to increase the number of interviews with firms and designers in order to have a more revealing accurate and nuanced picture of what actually goes on in design-related firms, to map and understand the connections between designers and design firms, to understand how designers are embedded in the region and to better assess their value and how they create it.

Sources of information

THE ONLINE SURVEY

Between May and September 2015, we invited designers and design companies in the region to take part in an online survey. The aim was to discover more about who they were, where they were, what they did, how and why they came to be in the region, and their experience and perspectives on a range of topics related to working in design in Bristol and Bath.

The two-part survey was designed by the research team and piloted among a sample of designers. Our aim was to ensure that the phrasing and style of questions were appropriate for designers across all sectors. Revisions were made to the language used and in relation to context and focus of some sections.

Part One was directed to designers as individuals: freelancers and those who were employed in a company. This section asked for information about where they worked, their expertise, the communities and networks they belonged to, their reasons for being in the region, their perceptions of working in this location and how things might be improved.

Part Two was directed at design businesses. This section asked for more detailed information, such as the size of business, turnover, type of company, how they networked within and outside of the region, why they were in the region.

The starting point for contacting possible participants was our research partners' membership and networks. All contacts in these lists were checked and cross-referenced to avoid duplication. We then used a range of methods to publicise the survey: social media (Twitter and Facebook), email, blog, direct mail, word of mouth. A total of 1400 people were contacted.

In all 155 designers completed Part One and Part Two of the survey; a response rate of 11% was disappointing. It suggested, perhaps, something of the attitude of busy designers to online surveys. However the information we gained was very rich and the analysis identified areas for further development and gaps to be filled.

Sources of Information

+ **Statistical data analysis**
+ **155 surveys**
+ **75 in-depth one-to-one interviews**
+ **29 telephone interviews**
+ **3 Focus Groups**
+ **Data mining**

Research Design and Methods

INTERVIEWS

At this stage we had, from the limited number of reports in the literature, a general idea of the possible pattern of design activity in the region. Our analysis of the respondents as a sample suggested that, in the main, it was representative of one particular sector. Almost 90% of respondents were in micro businesses with fewer than five employees. Only 4% represented a firm with over 50 employees. A large majority of the businesses were also well-established. Two thirds had been settled in the region for more than seven years and almost a quarter of the whole sample for more than 15 years.

To adjust this imbalance we conducted telephone interviews with 29 larger design companies. We also undertook a further 75 in-depth, semi-structured, one-to-one interviews, lasting between 45-90 minutes. Of these twelve were with large companies, with the rest divided between micro- businesses/freelancers and SMEs. 84% were in the private sector. Half of the interviewees were employees, the rest were divided equally between company owners and freelancers. Interviews were recorded, transcribed and then coded using Dedoose software.

Sectors included in the in-depth interview sample

Engineering and manufacture	**19**
Studios, agencies and consultancy	**17**
Content: animation, print, film	**7**
Architecture, landscape, heritage	**8**
Fashion and textiles	**3**
Applied designer-maker studios	**9**
Other (education, public sector, NFP)	**12**

We also conducted three focus groups with a total of 17 participants.

INNOVATIONS

Extending the qualitative dimension of the study led us to look for innovative ways to conduct interviews, to gather and analyse data from participants. One of these, Enterprise Imaging, provided a tool that enabled us to create a visual representation of the resources used by provider and client in the creation of a product, service or experience (a value proposition). More than 40 of the 75 one-to-one interviews involved use of the Enterprise Imaging tool.

We also used Importance-Performance Analysis (IPA) on the survey data to identify areas for focus in the analyses of other data sets.

Defining Design

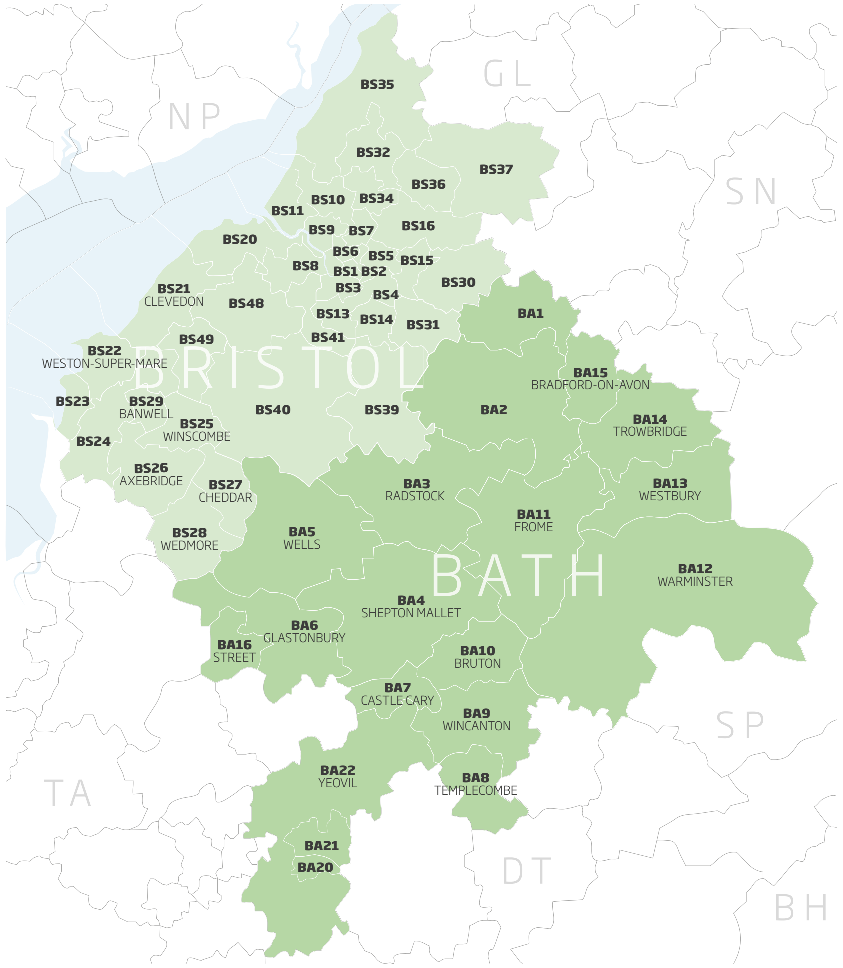
Design is considered in its broadest sense, with a particular focus on six key sectors for which the region is known:

+ **Engineering, aerospace, product and package design**
+ **Multi-disciplinary design studios**
+ **Applied designer-maker studios**
+ **Content: animation, motion graphics, television/film and publishing**
+ **Fashion and textiles**
+ **Architecture, heritage and landscape design.**

MAPPING THE REGION

Finding more designers to talk to also brought into sharp focus an understanding of how much of the design sector is hidden. The sources for the qualitative element of the research were originally provided by our partners in the project: their memberships and networks were the starting point for our survey. It became important to attempt a more complete mapping of design in the region, in all its complexity. Ideally a search for designers and design businesses would be undertaken on the ground. Sadly for us we did not have the resource or the time to use this method. Instead, this was undertaken using a variety of data mining techniques and is still in progress.

What we found by means of these different methods, how we brought this knowledge and understanding together in a holistic overview, what questions were raised and what conclusions we drew can be found in the following pages.



Defining the region

The region was defined by the postcodes of Bristol (BS) and Bath (BA). An exception was made to include two large engineering companies outside this definition but closely linked to the two cities: Renishaw in South Gloucestershire and Dyson in Wiltshire.

History Matters

The Hidden Legacy of Design across the Bristol and Bath City-Region

To understand the value and impact of contemporary design and design-related activities in the city-region, it is important to consider the historical social, cultural, industrial and political contexts within which the cities of Bristol and Bath have grown. NESTA's report, *History Matters: Path Dependence and Innovation in British City-Regions*, sought to determine the extent to which 'history matters' in determining the strength of innovation and adaptability in city-regions across the United Kingdom. We share its conclusion that the creation of new paths for development within a city-region depends critically on that region's previous history.

Some cities have struggled with the burden of their history. For others their histories have provided models for adaption, innovation, change and resilience. What legacy has the history of design bequeathed to the present and future city-region of Bristol and Bath?

Examples of design are highly visible in the region: the Royal Crescent and the Circus in Bath, and the Clifton Suspension Bridge In Bristol are icons of architecture and engineering. One provides an essence of elegance and wealth in a city of leisure, while the other serves as a prime example of engineering and business acumen, a bold structure for an industrial city.

However, these perceptions and the essential historical identity of the Bristol and Bath region are the outcome of carefully constructed images and driven by concentrated marketing. The story of Brunel, the Great Western Railway and the S.S. Great Britain has established Bristol as an innovative port city, one open to taking chances on high-value pursuits. Contrasted with the image of elegant, leisured Georgian Bath as a spa resort steeped in Roman mythology, these differing views have played a key role in defining the region's cultural and historical identity. However, neither view represents the whole story and they exist against a much more complex backdrop that has been driven by designing, building and making. Industrial activity has been just as significant to Bath as its Georgian past. And while the significance of Bristol's role as a port cannot be denied, the city once had its own spa, and the elegant Georgian architecture of Clifton is just as much a part of the city as its Harbourside sheds and warehouses. Understanding all the pieces of the puzzle is necessary to determine the extent to which history matters in the development of design in the region.

Some names from the past who brought their ideas into being in the region and founded businesses make the design heritage of Bristol and Bath visible:

+ **Henry Stothert**
+ **John Wood the Elder and Younger**
+ **James Mardon**
+ **The Wills and Clarks families**
+ **J.S. Fry**
+ **Sir Stanley Hooker**
+ **Sir Archibald Russell**

Though the Bristol and Bath region never reached the height of industrialisation that was experienced in the Midlands and the North of England, designing and making here has remained consistent and steady over the last three hundred years, with old industries replaced by new industries as dictated by time and circumstance. Tobacco, in particular, has played a key role in Bristol's design identity in terms of the illustration and printing of cigarette cards and packaging for tobacco products: namely, the world-famous cigarette cards by Mardon, Son & Hall for W.D. & H.O. Wills and later, the Imperial Tobacco Company. The deck cranes that were aboard the Titanic were made by Stothert & Pitt of Bath. The Brabazon and Concorde airplanes were part of the continually responsive aerospace industry in Filton. The 'Bath chair', was designed and manufactured by James Heath & Co. Fry's chocolate, Powell & Rickett's glass, Horstmann & Co's watches and cars, and even the wigs for The Lord of the Rings movie trilogy, have all been designed and made in the region.

Radiating from the two cities, in the surrounding region, towns such as Bradford-on-Avon, Trowbridge and Frome also boasted a capacity for small-scale industry and traditional crafts, especially in the success of the woollen industry. The completion of the Avon Navigation scheme in the eighteenth century and the construction of the Great Western Railway in the middle of the nineteenth century further connected the region, as well as providing stronger links to the outside world. Architecture, furniture, woodwork, wool, textiles, shoes, cabinets, coaches, bookbinding, printing, engineering, metalwork, ceramics, glass, transportation vehicles and other luxury and every day items have historically been made across the region and exported across local, national and international boundaries. As a result, Bristol and Bath and the region have maintained a vibrant and mixed economic base since the eighteenth century and design activity continues within a diverse range of industries today.

The idea of the functional city-region is tied most strongly to its ability to adapt to increased competition in a changing world; those cities that are able to re-invent their industrial past and create new industries thrive in national and international markets. In the Bristol and Bath region, long-established companies in traditional industries, including Clarks and Stothert & Pitt, continue to define what happens here today, maintaining innovation alongside time-honoured traditions. At the same time, young firms and freelancers are establishing new industries and creating innovation in the region's old industrial buildings. New and innovative design activity is continuously developing beside established industries and companies, adding richness to the diversity and resilience that defines this region.

Cossons a 'new industrial landscape' was being created in Bristol in the 1960s and 1970s. Through a combination of the city's surviving historical landmarks and the establishment of new and innovative industries, an impression was emerging of 'a living city changing in response to the continuing forces of industrial and social development'. Despite the economic recessions that have occurred since the 1970s, the Bristol and Bath region has remained resilient as a result of its broad economic base, which is driven, in part, by design. The Bath crane makers, Stothert & Pitt, closed their iron works in 1989, however, they still exist today as a design and consulting firm in Bristol. By 1983, William Harbutt's 'plasticine' was no longer produced in Bath, yet it was revived by Nick Park and Aardman in 1989 for the 'Wallace and Grommit' films.

History Matters

No small part of this is the role played by education. Further and higher education in Bristol, Bath and the wider region supports design and designers through a complex and comprehensive web of provision that has developed over the centuries in support of the region's trades and industries. The modern pattern of a range of degree-level courses pursued by full-time students drawn from a national and international pool of applicants reflects developments in higher education that have mainly occurred during the past seventy years. The local and regional frameworks underpinning them go back much further though, for example the websites of providers ranging from HEIs such as the University of Bristol and the University of the West of England to the further education sector City of Bristol College, all of whom support design in their work, find common ancestry in the educational work of the Society of Merchant Venturers, whose Charter dates from 1552, and whose work and involvement with the region continues.

Design is and has been everywhere. It has left its mark in pre-history and in every age, period or epoch since. The story of design in modern times is tied to the history of industry, building and manufacturing. When taken alongside social and cultural history, the industrial development of Bristol, Bath and the surrounding region from the eighteenth century to the middle of the twentieth century, the cycle of how companies begin, grow, and are replaced, provides the context necessary to understand the region's economic heritage and overall identity.

Within the project we have questioned and debated whether artists, designers and makers are drawn to places that have a historical reputation for design and creativity and if the concept of a good place for design to flourish is more than a stereotype. Can the identity of place affect the incidence of creativity? Historically, particular resources in this region have driven designing and manufacturing in industries like wool and coal. The woollen industry that once drove the region is no longer its main export and the resources that contributed to its success are no longer as important to the region's development. What fuels the regional economy now are ideas and innovation, things that are less tangible and harder to measure.

Bristol is one city that has risen to the challenge of re-inventing old industrial activities and inventing new ones. With projects being commissioned and completed both inside and outside of the region, as well as the development of strong regional, national and international networks, the continued contribution of manufacturing and engineering industries to the regional economy cannot be understated.

Bristol's tramways, under the dynamic leadership of Sir George White were the first in the country to use electric traction. In 1909 White set up the British and Colonial Aircraft Company (BAC). Its 1916 Bristol Fighter was one of the outstanding aircraft of the First World War and in the 1920s Bristol engines, designed by Roy Feddon, were the most widely used aircraft engines in the world. By 1939 the Bristol factory at Filton was the largest aerospace factory in the world. In recent years aerospace and defence have been among the defining industries of Bristol, through the iconic Concorde with its Bristol Olympus engines, the Bristol-engined vertical take-off Harrier and more recently through its association with Airbus. The A320, the first Airbus aircraft, whose wings were designed in Bristol, is the world's fastest selling aircraft family. Now the wings are assembled in North Wales, and the primary role of Bristol is arguably the knowledge work of design and other technical functions.

Whether driven by strong links between industry and manufacture or between art and craft, the on-going importance and value of the very different contemporary design identities exhibited by Bristol and Bath can arguably be attributed to the historical development of design and industry throughout the modern period. The ability to maintain a strong presence in the wider economy and culture of the United Kingdom in the face of changes, failures, and challenge is remarkable. We would argue that the legacy of design that exists in the region today is a legacy of ideas, innovation and interconnectedness.

One of Bristol's main functions within the region was as a source of capital. Bristol's financiers were its merchants, who had accumulated their wealth through overseas trade in the seventeenth and early eighteenth centuries. They financed the Kennet and Avon Canal, Bristol Floating Harbour, Clifton Suspension Bridge, the Great Western Railway and roads. This tradition lives on in the Society of Merchant Venturers, among whose early members was Edward Colston, slave trader and philanthropist, memorialised in Bristol and a subject of much debate.

The Timeline

The history of design in the Bristol and Bath region has many stories to tell – some are about place, some are about people and some are about what they make. We have constructed a time line of people, events and activities that demonstrates the rich, varied and constantly evolving history of the region.

The Bristol and Bath design history timeline charts the development of the diverse design sectors in the region. Starting with the wool trade in the middle ages, it highlights how the packaging industry was built upon the tobacco, cocoa and sugar imports of Bristol's triangular trade. It also shows the development of the aerospace industry from the beginnings of flight and the impact of decisions to locate the Ministry of Defence and the BBC in the region.

KEY

Design Categories

- Engineering & Manufacturing
- Printing, Packaging, Studios, Agencies & Consultancies
- Content: Animation/ Motion/Film
- Architecture, Landscape & Heritage
- Fashion & Textiles
- Applied Designer-Maker Studios

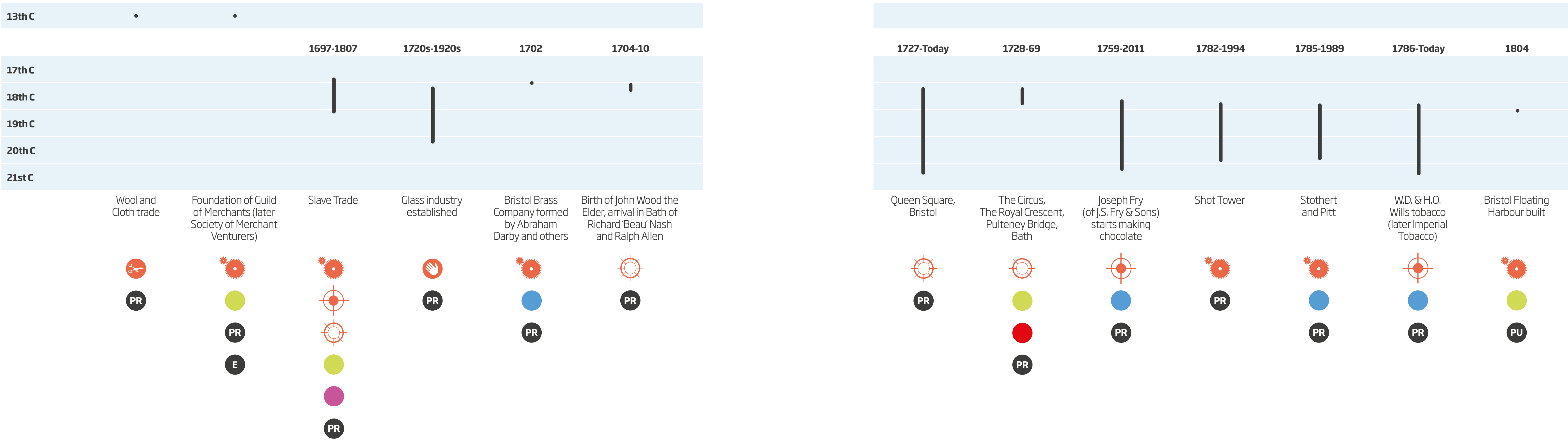
Classifications

- Beacon
- Company Change
- Company Formation
- Infrastructure
- Policy Change
- Political Event
- Space

Stakeholders

- PR Private
- PU Public
- NP Not for Profit
- E Education

History Matters / The Timeline

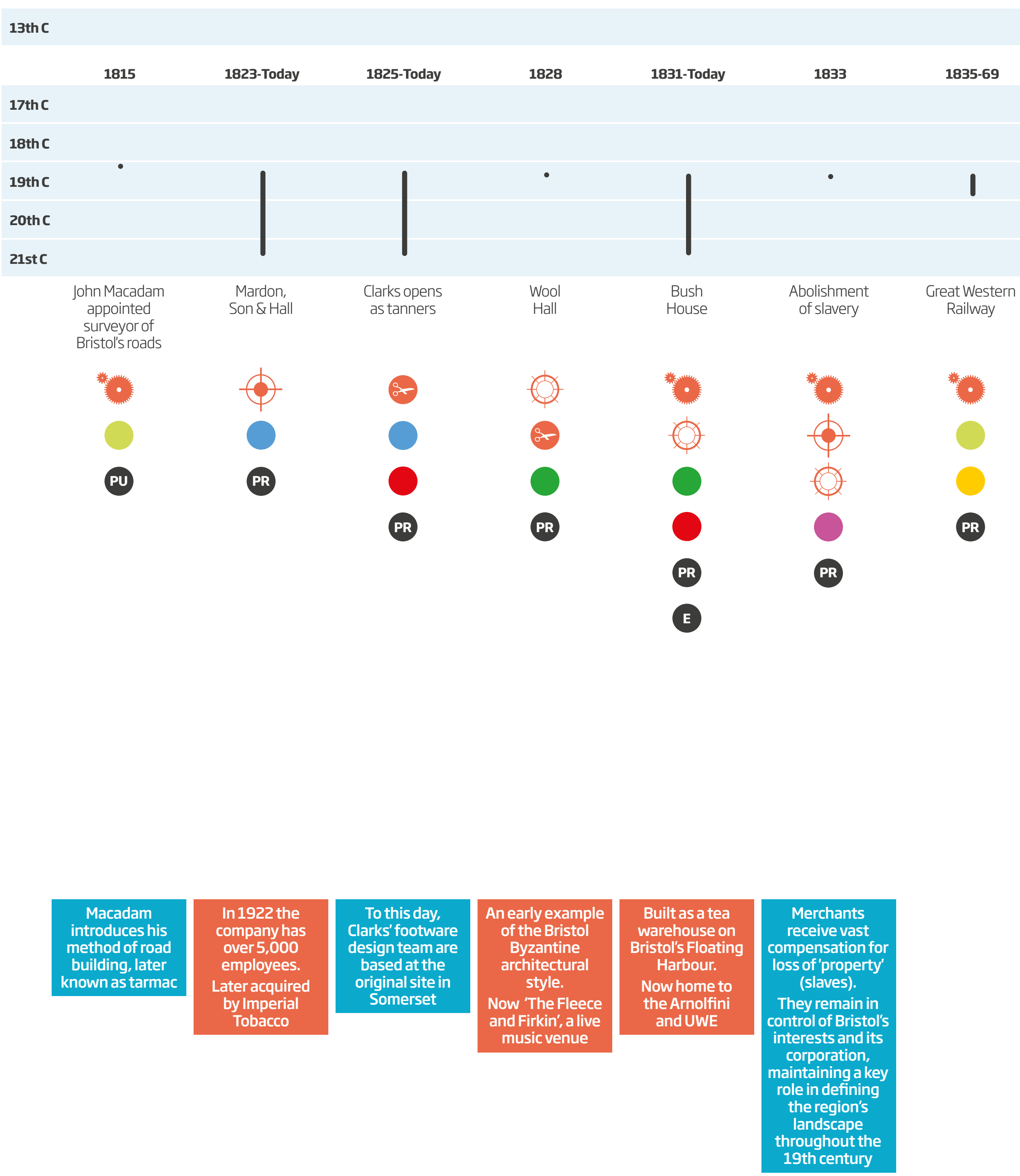


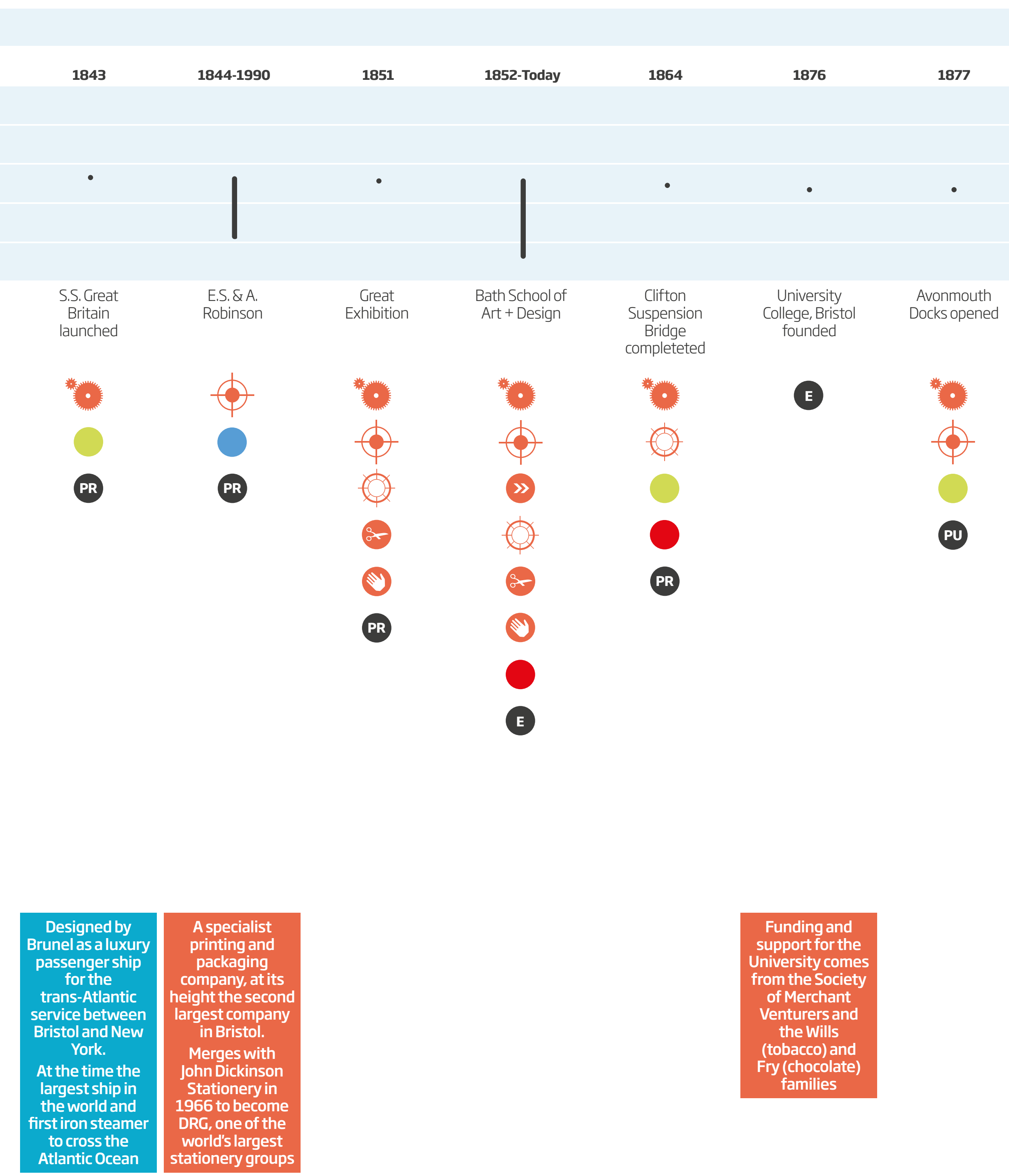
Design significance

Interesting fact

Event	Note
Foundation of Guild of Merchants	The Society establish a school that later becomes the University of Bristol, University of Bath, University of the West of England and the City of Bristol College. They also go on to fund the Clifton Suspension Bridge and the Great Western Railway
Slave Trade	The 'Triangular Trade' brings money and key natural resources (tobacco, cocoa and sugar) to the region. The printing and packaging industry develops to support cigarette and chocolate manufacturers
Glass industry established	Begining in the 17th Century, the glass industry becomes well established in Bristol. Lazarus Jacobs manufactures Bristol Blue glass from the 1780s
Bristol Brass Company	A new casting method allows mass-production of iron pots. Darby was a key figure in the Industrial Revolution
Birth of John Wood the Elder	Architects of Georgian Bath
Queen Square, Bristol	The first residential square in the UK outside London and still one of the largest residential squares in Europe
Joseph Fry	During WW1, Fry & Sons is one of Bristol's largest employers. It merges with Cadbury's in 1919 with its Keynsham site closing in 2011
Shot Tower	The world's first shot tower. Built by William Watt, inventor of the process to manufacture lead shot. A replacement tower, and the world's last, is built in 1969
Stothert and Pitt	Stothert & Pitt built the 35-ton Fairbairn Steam Crane for Bristol Docks in 1876

History Matters / The Timeline



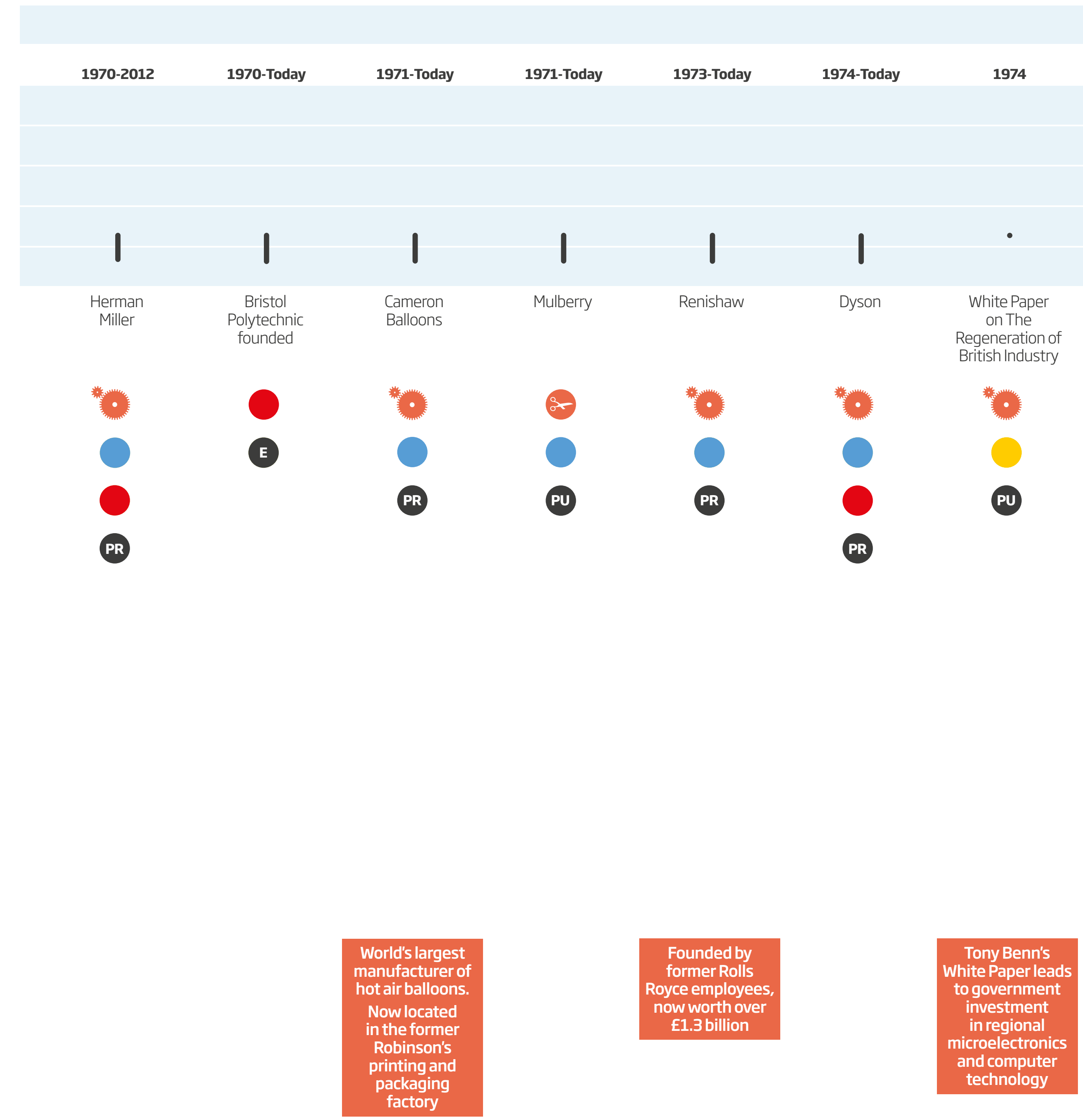


History Matters / The Timeline

13th C, 17th C, 18th C, 19th C, 20th C, 21st C

Dates	Name	Description
1880-2001	G. B. Britton and Sons boot and shoe works	From 1955 Dryfoot manufactures Tuf military and safety foot ware
1881-2006	Packer's Chocolate	Packer's Chocolate, later becomes Elizabeth Shaw
1882-1957	Douglas Engineering Company	During WW1 Douglas supplies 70,00 motorcycles to the military
1897-1983	William Harbutt invents 'Plasticine'	The Harbutt Company produces Plasticine until 1983
1908-Today	Bristol Guild of Applied Art	Inspired by the philosophy of William Morris. A meeting place and showcase for regional arts and crafts
1909	University of Bristol receives Royal Charter	
1910-1966	Bristol Aeroplane Company	Development of a regional specialisim in aerospace. BAC go on to become a major part of British Aerospace in 1977, and a key component of BAE Systems in 1999
1915-2001	Fairey Aviation Company	In 1956 The Fairey Delta, a forerunner to Concorde, becomes the first aircraft to exceed 1,000 mph
1934-Today	BBC opens up in Bristol	The presence of the the BBC and the development of the Natural History Unit in 1957 leads to regional specialist knowledge in TV and film production
1945-Today	Rotork	Fry (chocolate) family acquire Rotork. Former employee, James Dyson goes on to invent the Dual Cyclone bagless vacuum cleaner
1948-Today	Bailey of Bristol	Bailey of Bristol are the UK's longest established caravan manufacturer
1949	First flight of Bristol Brabazon	Bristol Brabazon, the largest airliner of its day, is deemed too large and expensive for regular use and broken up for scrap in 1953. The runway built for Brabazon is later used by Concorde
1961-Today	British Aircraft Corporation and Westland Helicopters	
1961-Today	Arnolfini gallery founded	

History Matters / The Timeline



History Matters / The Timeline

Timeline bands: 13th C, 17th C, 18th C, 19th C, 20th C, 21st C

Date	Entry	Note
1975-Today	Bath Spa College of Higher Education	
1976-Today	BuroHappold	BuroHappold engineered London's Millenium Dome, now the O2
1976-Today	Bristol Artspace Ltd (Now Spike Island)	
1977	Morph	Animated by Aardman, Morph appears alongside Tony Hart on BBC TV's Take Hart and Hartbeat
1977-Today	Bristol Craft Centre (Now Centre Space)	
1978-Today	Ferguson Mann Architects	Architect George Ferguson, first elected Mayor of Bristol
1978-Today	Feilden Clegg Bradley	FCB currently renovating London's South Bank Centre
1978-89	Inmos	High-tech company, initially funded by government investment as a result of White Paper on Industry. Employees go on to play a key role in the formation of the high-tech cluster in the region
1979-Today	Bristol International Balloon Fiesta	
1982-Today	Watershed, Bristol	
1985	Defence spending	Cold War means high level of government defence spending benefits regional aerospace design and manufacturing
1985	Desktop Publishing	
1985	Inmoss Transputer	The Transputer, the first general purpose microprocessor, is a pioneering and highly influential development in computer technology
1985	MoD contract out to the private sector	Many regional engineering and defence-related design companies set up in close proximity to the MoD

Category markers: Bath Spa College of Higher Education: PU, E. BuroHappold: PR. Bristol Artspace Ltd: NP. Morph: PR. Bristol Craft Centre: NP. Ferguson Mann Architects: PR. Feilden Clegg Bradley: PR. Inmos: PR, PU. Bristol International Balloon Fiesta: PR, PU. Watershed: PR, PU. Defence spending: PU. Inmoss Transputer: PR. MoD contract out to the private sector: PR, PU.

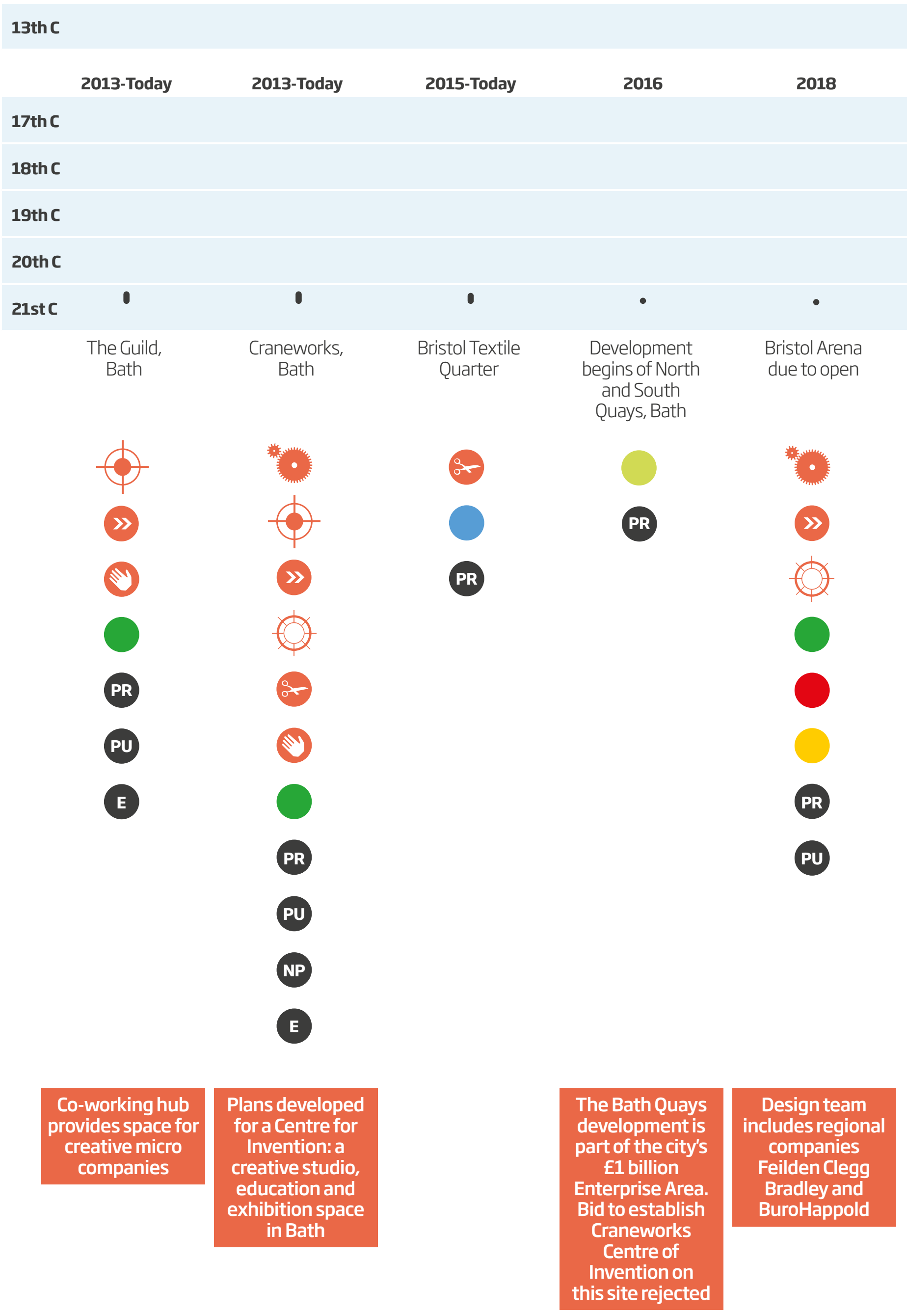
History Matters / The Timeline

13th C
17th C
18th C
19th C
20th C
21st C

Date	Event	Codes	Notes
1985-Today	Future PLC	PR	
1985-Today	HP Laboratories move to Bristol	PR, PU	Local government incentive encourages HP to locate its European research centre in Bristol. Employees go on to play a key role in the formation of the high-tech cluster in the region
1986	Wapping dispute	PR	Changes in print trade unions, alongside the rise of desktop publishing, mark a decline of regional printing and packaging companies
1986-Today	Bath School of Art and Design	E	
1986	Bristol and Bath Science Park concept suggested	PR, PU, E	Built to attract high-tech companies to the region, the Science Park finally opens in 2011
1987	First flight of Airbus A320	PR	The Airbus A320, with wings designed in Bristol, has been the world's fastest selling civil airliner
1990-Today	World Wide Web		
1991	Cold War ends	PR, PU	Defence spending cuts lead to changes within aerospace. Regional companies seek new markets and cost savings
1994	Changes to BBC procurement	PU	BBC permitted to use outside contractors, resulting in the development of a cluster of TV and Film related companies in close proximity to the BBC
1996	Bristol Legible City concieved	PU	City ID, formed by ex-employees of Bristol City Council after the success of Bristol Legible City, go on to design wayfinding systems for cities incl. London, New York and Moscow
1998	Creative Industries Mapping Document published	PU	The Department for Culture, Media & Sport's first ever attempt to define, map and value the UK's creative industries
1998-Today	Spike Island	NP	
1999-Today	British Aerospace and Marconi mege to form BAE Systems	PR	
2002-Today	West of England Aerospace Forum	NP	Regional networking association for aerospace and defence companies

History Matters / The Timeline

History Matters / The Timeline



We're at our best when somebody says, "I have got this great idea for something, and I want to hang it from sky hooks." And we go, "Really, right okay, let's think about that."

Measuring the Value of Design

Statistical studies of the importance of design and design firms to the UK economy invariably suggest that firms in the design sector are, on average, more productive than the average firm. They also report that designers have been found to be more productive than the average UK worker, and are crucial for enhancing the value that a firm creates. For instance, the Design Council (2015) suggests that the design economy was worth £71.7bn in 2013, with close to 75,000 design firms operating in the UK economy (an increase of 51% since 2010). Designers have been found to be 41 percent more productive than the average UK worker, with their productivity increasing by 9.5 percent between 2009 and 2013, and decisively with designers working outside of the design industry being the most productive type of designer.

We set out to better understand the importance of design to the Bristol and Bath region using regression analyses. Our intention was to identify and quantify the importance of various factors that shape and enhance productivity in the region.

We built on the Design Council's (2015) estimates in order to better understand the importance of design to this region. An accurate estimation of the relative influence of a sector on a local economy should take into consideration the context and local attributes of the region – i.e. those factors that are important in valuing productivity or turnover but which can lie outside of a firm's influence. Our estimates control for additional issues, such as agglomeration and skills of the local labour force, which are vital because of the spillovers from other sectors and between workers that enhance value and knowledge exchange. Estimates should also take into account the scale of production, which can be reflected in the number of workers, ownership characteristics and the amount of capital.

We reveal that small design firms are significantly more productive than the average small firm in England and Wales and that small design firms in the Bristol and Bath region are more productive than small design firms elsewhere in England and Wales. The evidence for larger firms – i.e. those with more than one plant – is less clear. We also find evidence that design firms have lower turnover than the average firm, but their turnover is significantly higher if they are based in the Bristol and Bath region.

The statistical methodology

Here we draw on a well-trodden path in the economics literature that applies regression analyses in an attempt to identify and quantify the importance of various factors that shape and enhance productivity. We draw on data from the Annual Business Survey (ABS) that is collected by the UK's Office for National Statistics and made accessible for analysis via the UK's Secure Data Service. The ABS is a data set that contains many useful firm-level indicators of size, productivity and method of production. The standard way of measuring productivity at the firm-level is to use Gross Value Added (GVA), which represents the income to businesses less the cost of goods and services consumed in its creation. An alternative measure of how productive a company is can be obtained from examining turnover figures.

We merged into the ABS data set information on firm-level capital stock estimates (Harris, 2015), district-level population density and local labour force quality figures (Neighbourhood Statistics, 2015) and existing SIC code indicators of the design sector[1]. After this merging process was complete we were able to analyse productivity data for 181,916 plants and turnover data for 1,652,656 plants across England and Wales.

The design sector is defined according to a specific set of SIC codes, as shown in the appendix. Out of the 181,916 plants in the regression, 10,094 (5.55%) are design related. There are 251 design-related plants in the Bristol and Bath region, which represents about 1 in 40 of the entire design-related plants in England and Wales as listed in the dataset. If we use the augmented list of design-related SIC codes produced by the Design Council then the number of design-related plants in the regressions increase to 10,339 (5.68%), and under this definition of design there exists 258 design-related plants in the Bristol and Bath region as listed in this data set.

In order to identify the stability of the results we estimate several stability checks. First, the 2012 estimates, which represent the most up-to-date data available for this analysis, are re-estimated using the oldest ABS sweep of data corresponding to 2009. Second, the abundance of firms with more than one plant will potentially skew the results due to greater scale economies, so we re-estimate the models again using only single-plant firms.

[1] www.designcouncil.org.uk/sites/default/files/asset/document/value.design.pdf

As is common in the productivity literature, we estimate a Cobb-Douglass production function to reveal the relative importance of capital stocks and labour supply for the production process and then augment the underlying model to include variables of interest. Of particular relevance here are three variables: i) one indicating whether the plant operates in the design sector, ii) one indicating whether the plant operates in the Bristol and Bath region and iii) one indicating whether the plant operates in the design sector and in the Bristol and Bath region. A full set of variable descriptions are accessible from table A in the appendix.

PRODUCTIVITY
Our analysis seeks to identify if design firms are more productive than the average firm. Table A2 in the appendix shows that design firms were, on average, 23 % less productive than the average firm in 2012 whereas design firms in the Bristol and Bath region were only 12% less productive than the average firm. This has changed since 2009 when such firms were 43 % less productive in the non-Bristol and Bath area and 29 % less productive in the Bristol and Bath region. This relative improvement in design firms' productivity over time and why their productivity was so much better in the Bristol and Bath region than elsewhere in England and Wales is worthy of further investigation.

These estimates may be affected by the presence of particularly large companies in the baseline category with excessively beneficial economies of scale. A re-estimate of the models based only on a sample of single-plant firms reveals that design firms were 11% more productive than the average firm in 2012, and were 14 % more productive than the average simple-plant firm if they are located in the Bristol and Bath region. This changed markedly since 2009, when firms in the Bristol and Bath area were 3 % less productive than the average single plant firm. Qualitatively similar results are obtained when we use the augmented definition of design firms presented by the Design Councils, and the corresponding coefficient estimates presented in table A3. To summarise, there is evidence here that design firms, which tend to be smaller than the average, may be significantly more productive than the average small firm, and that design firms in the Bristol and Bath area were more productive than design firms elsewhere in England and Wales.

TURNOVER
Our analysis also seeks to identify if design firms have greater turnover than the average firm. Table A4 shows that design firms had, on average, 31% lower turnover than the average firm in 2012 in England and Wales. Design firms in the Bristol and Bath region, however, had on average a 5% greater turnover than the average firm. This figure slipped back a little from the corresponding 2009 figure when design firms had 5% less turnover but had 7% greater turnover if they were located in the Bristol and Bath region.

Again, these estimates may be affected by the presence of particularly large companies with excessively beneficial economies of scale. A re-estimate of the model based only on a sample of single-plant firms reveals that design firms were average according to this measure, but had 3% greater turnover than the average single-plant firm if they are located in the Bristol and Bath region. This has changed since 2009, when firms in the Bristol and Bath area had 12 % greater turnover than the average single-plant firm. Qualitatively similar results are obtained when we use the augmented definition of design firms presented by the Design Councils, with the corresponding coefficient estimates presented in table A5.

Limitations of the data

Hiding behind these estimates, both the Design Council's and our own, are a number of key modelling assumptions. For instance, a best-guess had to be made concerning which firms are and are not operating in design. Although this best-guess is based on informed judgement, the only real way to identify if a firm is driven by design or is heavily influenced by design is to ask them. Although the inclusion of design firms in some Standard Industrial Classifications (SIC) codes may be perfectly acceptable – such as the 'manufacture of games and toys' – the relative importance of the inclusion of firms in other SIC codes is, perhaps, more questionable – such as the 'wholesale of household goods.'

In addition to choosing which firms to include or otherwise, estimates will be based on the submission of data to the Her Majesty's Revenue and Customs (HMRC), but this is not compulsory for firms that operate below the tax threshold and therefore such databases will under-represent firms that are often small and/or run on a part-time or ad hoc basis, which can be an important characteristic of some design-related firms. Furthermore, because firms with fewer than 250 employees are sampled on a structured basis and do not appear every year in the data, there are potentially even more reasons to question the accuracy of the estimates for the design sector as many will be included on this basis[2]. Collectively the above issues raises four key problems for any

[2] It is possible to reweight the data, but this introduces further crucially important assumptions about the degree of similarity of the characteristics of the firms that are and are not included in the sample.

investigation trying to use official data sets to understand the relative importance of particular industrial sectors, such as the design sector, that are dominated by small and medium sized (i.e. less than 250 employees) firms.

First, as design-related firms are more likely to be small in employment size and in terms of turnover then the probability of their inclusion in this data set is likely to be biased downwards.

Second, as the ABS data set is arguably regionally representative (where the region is defined as a NUTS1 administrative region, e.g. the South West, North West or Wales) but is not necessarily believed to be representative at a lower geographical level, our analysis of plants that exist within the Bristol and Bath region may not be representative. Unfortunately it is not possible to identify the extent to which it is representative as firms with turnover smaller than the tax threshold are not required to submit this information to the respective authorities, and hence for inclusion in the Inter-Departmental Business Register (IDBR) from which the ABS draws.

Third, the ABS sampling scheme is arguably representative at the 1-digit SIC code level. However, as we are drawing on a non-standard definition of the design sector that cuts across SIC categories there is also a lack of understanding whether our estimations draw on a representative sample of design firms.

Fourth, as much of the ABS data is collected by accountants on behalf of firm managers, it is not possible to rule out the possibility that the postcode submitted by the accountant is actually the accountant's postcode rather than the plant's postcode. In our case, this may bias upwards the number of firms (including those that are design-related) that are recorded as being present in the Bristol and Bath area.
Analyses of the relevant data sets can be fruitful when measuring turnover and productivity. Although this type of data is widely used and our study uses conventional techniques, we are doubtful whether this 14 % productivity premium for design firms in the Bristol and Bath region accurately reflects the real value of design in the area. Perhaps the easiest way to illustrate why this is the case is to refer to the work by Ritchie et al. (2012) who show that the number of manufacturing jobs is difficult to identify because many people who do manufacturing activities do not do them in the manufacturing sector.

Moreover, many people that work in the manufacturing sector are actually service sector workers. In a similar way, designers and design activities are difficult to identify simply because many designer as well as design activities are not necessarily classified within the SIC codes representing design. This is important if government policy is going to target policy to help designers, and whether targeting design is a meaningful policy target.

PRODUCTIVITY

+ small design firms are significantly more productive than the average small firm in England and Wales,
+ small design firms in the Bristol and Bath region are more productive than small design firms elsewhere in England and Wales.

For larger firms – those with more than one plant
- the evidence is less clear

TURNOVER
In general

+ design firms have lower turnover than the average firm,
+ design firms turnover is significantly higher if they are based in the Bristol and Bath region.

Findings

Mapping the Territory

The need to understand creatives and their connection to place becomes increasingly necessary to economic development as cities continue to grow – artists and designers breathe new life into cities, which serves to attract other forms of industry and different types of people (Florida, 2002).

FINDING THE CREATIVES

NESTA's A Dynamic Mapping of the UK's Creative Industries (2013) identified the creative industries' workforce as its defining feature, especially in the ability to harness the capabilities of this workforce to produce outputs which constitute a growing share of the value added in most advanced economies.

The Bristol & Bath by Design research team shares this understanding and gathering information from people working as designers in the region, 'the creatives', was from the start an important strand in the enquiry. We wanted to map each of them in order to understand the complexity of location in the region, to identify where activity clustered and why. This was not an easy task but we have had some success and articulated significant issues. The work continues.

WHO ARE THEY? WHERE ARE THEY? HOW COULD WE IDENTIFY THEM?

Our definition of 'design' was deliberately wide to include those working outside the creative industries. We were looking for creatives in areas of activity as diverse as aerospace and applied art. Companies in the aerospace industry are usually large or medium-sized. The creative industries sector in the region is predominantly made up of small and micro businesses (which employ fewer than ten people) and freelancers. How could we get the information to put them on our map?

A starting point was the valuable research conducted by the project's partners Bristol Media, Creative Bath and the West of England Design Forum, the West of England Local Enterprise Partnership (LEP) and the REACT Knowledge Exchange Hub. This included data collected from surveys circulated to group members and those working in design and more broadly, the creative economy, across the region. Bristol Media, for example, conducts a yearly survey of the creative industries across Bristol and Bath. All of the members of Bristol Media and Creative Bath are surveyed. According to the 2014 Bristol Media Barometer, there were 15,900 jobs in the creative industries across the Bristol and Bath region,

Between January 2015 and April 2015, we used lists of designers, organisations and companies provided by our partners. These were checked and used as a contact list for our online survey. The checking process involved searching for companies registered at Companies House and noting their Standard Industrial Classification (SIC) codes; this is a list from which a company chooses the type of activity it is engaged in. SIC numbers were first introduced into the UK in 1948, since then the classification has been revised six times. The latest version was adopted in 2008.

We began with a list of 1589 active companies and freelancers. Using SIC codes as a benchmark indicator for the design industry, our search quickly revealed that not all companies were registered with Company House. Sole traders, freelancers, small to medium enterprises and even large design agencies, who operate on a complex multi-functional level, were not listed. Among companies who were registered some had classified their activity under a division they might not be expected to choose. For example, a large design agency in Bath registered at Company House under Section M: Professional, Scientific and Technical Activities, had classified their business as SIC code 74100 - Specialised design activities; however they had also identified their business as 82990 – Other business support service activities not elsewhere classified.

Many freelancers, sole traders and microbusinesses are not required to register with Company House. From our initial data search only 65% of the companies and only 40% of the 441 freelancers were registered. In addition Company House data is updated once a year, which makes verifying freelancers, sole traders and microbusinesses difficult because of their transient nature.

We also found that a company may register more than once, separating itself into a series of interrelated activities. For example a large animation company in Bristol is listed 13 times, using many different SIC codes.

THE TROUBLE WITH SIC

SIC codes are used in a range of statistical analyses but their use in relation to the creative economy has not gone without question.

The DCMS Classification of Creative Industries, instituted in 1998 and widely used as a standard tool in surveys and economic analyses, incorporates SIC codes. Over time, however, inconsistencies in the classification have appeared, not least because of the growth of digital activity. In 2013 the DCMS, working with NESTA, produced proposals for updating their classifications, including in the use of SIC codes. NESTA's Dynamic Mapping of the UK's Creative Industries (Bakhshi et al, 2013) published in the same year set out the issues in detail.

Our approach to mapping designers and design activity in the region has provided evidence, which reinforces the conclusions of others in the project team. We are convinced that attempts to measure or map any kind of design activity using SIC codes alone will inevitably be incomplete.

The codes themselves may not accurately identify design activity. In the DCMS (2013) suggestions for updating classifications, only two in the proposed list of Creative Occupation (SOC) relate specifically to design: web design and development; graphic designers. The fact that 'design' and 'designers' are pervasive in so many industries creates a problem for categorisation. The DCMS's proposed list of seven Creative Industries Groups excludes, not unreasonably, engineering which is rich in designers. In fact the DCMS classification excludes many SIC codes that constitute industries of high creative intensity and include large numbers of 'creatives' in their work force. The updated list, more questionably, also proposes to delete the previous category of Crafts. The seven listed industry groups are all sites for design activity but 'Design', once a separate category, is retained and conflated with Designer Fashion.

Even though classifications are regularly revised over the decades to reflect emerging technologies, the different categories/sectors are still a blunt tool and do not accurately describe all the subtle descriptions of what designers do or the context in which they work.

Of equal importance is our finding that a very large proportion of the design industry in the region has no SIC code and thus is statistically invisible.

DATA MINING

In order to extend our initial data set, to ensure our information is current and still with the aim of fully documenting design activity in the region, we undertook a second round of data gathering.

In addition to one to one interviews, telephone interviews, social and networking events coordinated by BBXD and their partners, we undertook a range of data mining activities. Whilst this method of research is time-consuming and costly, it was important to reach to individuals and enterprises that were not covered by the ONS data.

We started our search using Google, beginning with broad key words for Bristol and Bath and area, for example: designers, graphic designers, or web designers, architectural designers. We searched directories and registers of companies, professions, and professional associations. Twitter, LinkedIn, and other publicly available databases were incorporated in the search. We used well-known creative hubs and spaces, societies and fora, design firms, designers and word of mouth. Through the BBxD website we invited designers and design companies to identify themselves.

We have found it difficult to find freelancers who are not in a directory or on the Internet; they may obtain work via a word of mouth and may not need to use traditional advertising methods. Any designer or design company needs to be part of a design network or design group to be found; without some advertising presence, or on-line connection they are invisible to us.

The project's deliberately broad definition of 'design' provided yet more evidence of the hidden and embedded nature of the activity within any organisation. Because design works on a multi-functional level, across sectors it is difficult to separate out the design aspects from the rest of a business.

MAKING THE MAP
Our second objective was to convert the information we had gathered into a method for physically mapping the position of companies in a visual yet informative way.

A major challenge was to find the exact location of an individual, a company, or an activity. In many cases sole traders and freelancers do not advertise their postcode, as they may be working from home.

The registered address for a company may be different to the operational address. For example a large engineering company is registered to a London postcode, but is operational in Bristol. It was therefore important to cross check the Company House registered address with other sources, such as the company's website.

THE BBxD APP
In order to utilise and visualize this data, we decided to create an app that not only acts as a design directory but also plots the geographical location of each design business or freelancer. By categorizing the different design sectors we can reveal through filtering options where particular specialism are densely populated or dispersed throughout the region. This highlights the sectors that are in abundance as well as the more fledgling design areas.

When producing and promoting the app we asked designers to add themselves by completing an online form. As well as giving us an opportunity to involve designers in the project, it also enabled us to find many freelancers that could not be found through our previous search methods.

We have carefully considered the aesthetic, tailoring it to the design community, in the hope that our prototype will engage designers and encourage them to provide data on themselves and their businesses. Now that an app of this type has been developed we hope that it can be used as a tool for mapping design in other cities.

> *What would enhance the design industry in the region? A visual online directory showcasing the skills on offer from the whole creative community. A creative hub of expertise where you can see and compare at-a-glance and by sector. I think this would become the go-to platform for companies seeking the right people for their project.*
> -Survey response

> If we want to do something, we know all of the people we would need and we can put them into action really quickly and we can do some really great things. I don't think we could find that anywhere else in the country or in Europe actually. It's really special.
>
> *– Event Production Designer, Bristol*

The Designers

The designers who responded to the online survey were involved in a wide variety of types of work. Responses to the survey question 'please describe what you do' included: systems architect in the aerospace sector, potter and designer- maker and lecturer in ceramics, high-end interior design studio designing yacht interiors, hospitality and residential projects, art editor on a national magazine, creative agency for branding, designer and manufacturer of timber buildings, app developer and costume designer. The largest proportion of respondents was made up of graphic designers; the smallest group was from engineering or aerospace.

A quarter had been in their current post more than ten years; 43% had been in their current post for three years or less.

CHARACTERISTICS OF DESIGNERS WHO RESPONDED

	%
Employed full or part-time	**35**
Founders/owners/employers	**32**
Freelance or sole traders	**26**
Living in Bristol	**68**
Living in Bath	**25**
Living elsewhere	**7**
Male	**54**
Female	**46**
White British	**86**
Originally from the region	**35**
Incomers	**65**
In the region for over 15 years	**45**
Educated to degree level	**80**
Earning less than £6,000 pa	**5**
Earning less than £20,000 pa	**23**
Earning more than £31,000 pa	**39**
Earning more than £52,000	**12**

The reasons for becoming a designer, for most respondents, had little to do with income but were much more associated with personal interest, wanting to have a sense of accomplishing something, and putting skills into use. A quarter were motivated by wanting to run their own business. The freedom to work creatively and flexibly, to solve problems through their work and to make the world a better place, were also important to them.

Over 80% were satisfied or very satisfied with their work.

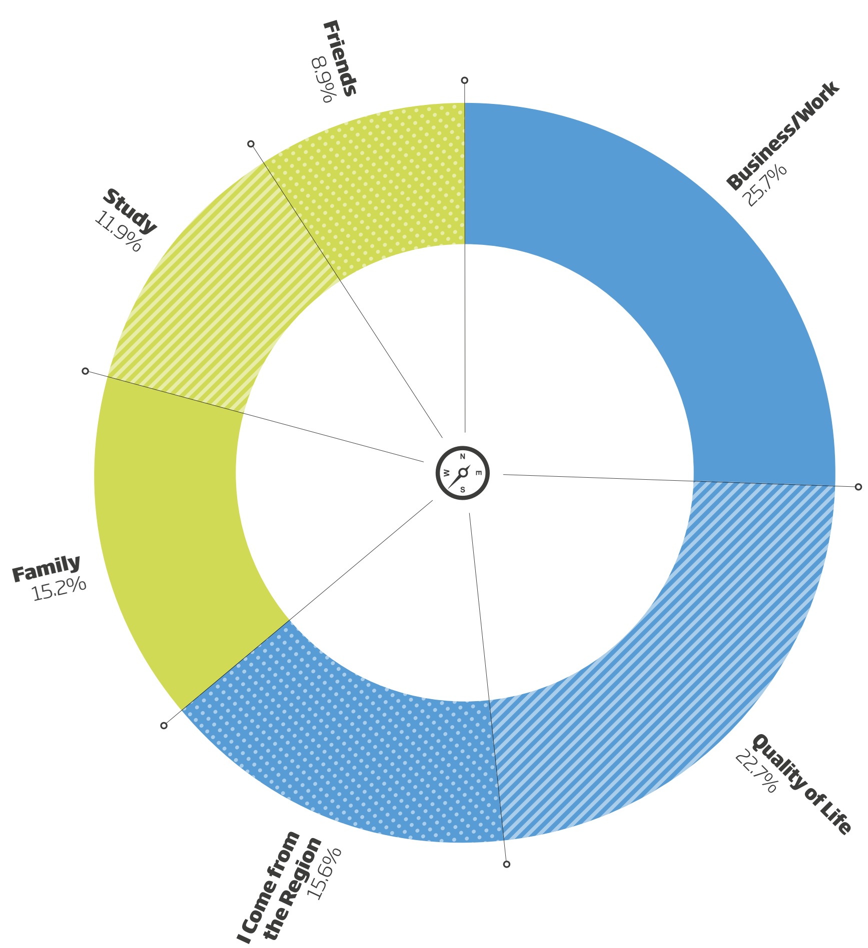
Most of the group were graduates and of these three-quarters had studied a design-related subject. A third had postgraduate qualifications, mostly at Masters level.

WHAT BROUGHT THESE DESIGNERS TO THE REGION?

The selection of a response to this question highlights significant aspects of the design community in the Bristol and Bath region.

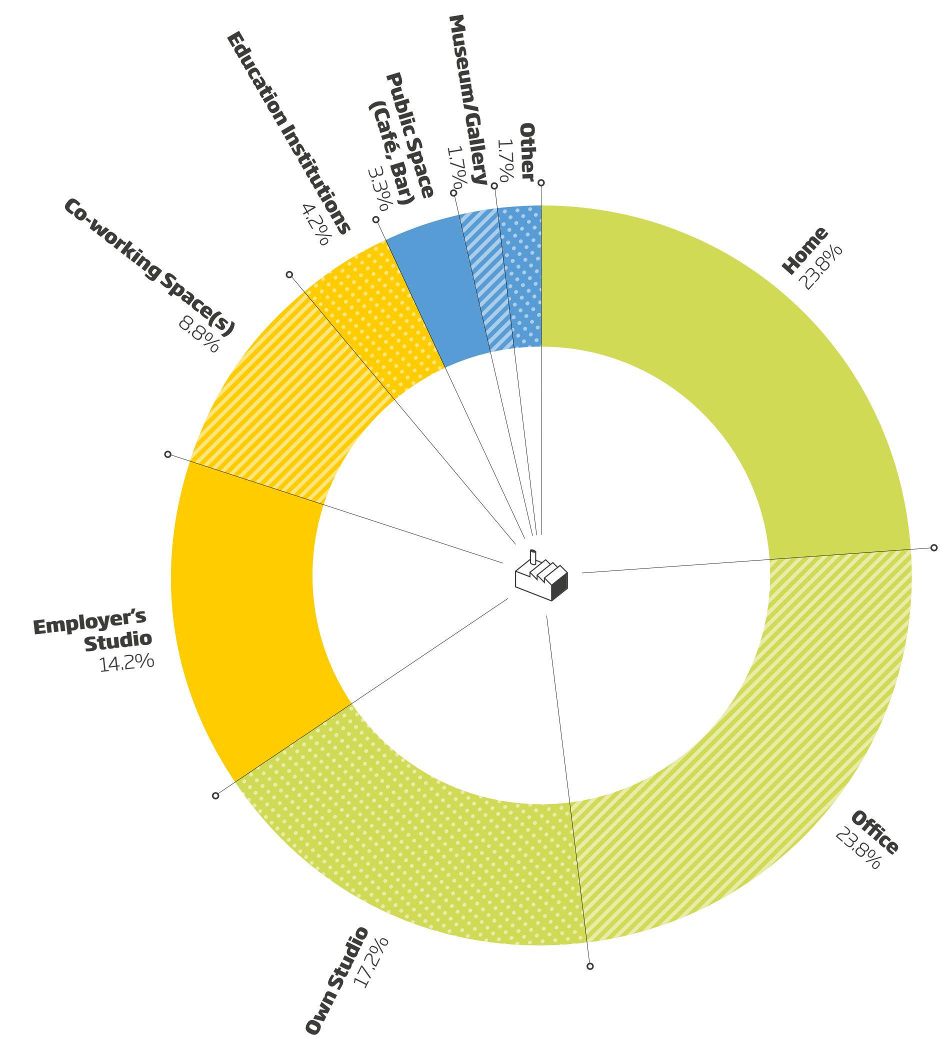
Only a quarter of respondents chose to explain their coming to the region as business or work related. Family, friends and quality of life account for almost half the reasons given. A quarter were already living here or had come to study and decided to stay. Overall, personal rather than professional motivation accounts for their location in the region.

This is reflected in what these designers said about the ways they built their networks. The majority of responses were spread between personal contacts, friends, family. There was less emphasis on gathering contacts through work and business networks.



WHERE DO YOU DO THE MAJORITY OF YOUR WORK?

The response to this question indicates the high proportion of micro-businesses or freelancers in this sample, and suggests something of the style of the working lives of this sample. Almost a quarter of respondents worked mainly at home. More than a quarter did most of their work in their own studio, in co-working spaces, or in a café or bar. Less than half worked in an office or at an employer's studio.



WHAT DO YOU MOST LIKE ABOUT BEING/ WORKING AS A DESIGNER?

Creating something from nothing and seeing it grow from an idea to a reality.

A creative environment to think in and flexibility in when and how I work.

Freedom, creative problem-solving, satisfaction, learning, breaking rules.

It's not like having a job but a passion I get paid for.

Because everyday is different – a cliché I know, but it's true. I love starting a project and not knowing how it will turn out. It's a very exciting was to make a living – most of the time. It's a discipline that demands an open mind, and the ability to look at things sideways and be able to use these skills to help other people solve problems is incredibly rewarding.

The sense of achievement you get from designing something that you think looks good and is practical, and finding that others like it too and are willing to buy into your designs.

The fact that your work lives beyond the walls of an office, or the boundaries of a sector, that it can make lives easier. It is a pleasure, truly, to have this as an occupation.

The problem-solving, the solutions and the making of something beautiful out of a muddle of ideas.

The sense of creative freedom – not always available. Creating things, hopefully, that make a difference to people's lives and day-to-day living.

The chance to challenge the brief and create a new concept. Be at the forefront of a project, leading it and exploring new trends, fashions and technologies.

The field combines technology, psychology and aesthetics. It makes it challenging to find the right answers to design problems, which makes it fun.

DIVERSITY

Diversity can be understood as an indicator of a strong ecosystem: it suggests a rich flow of value between a wide range of actors. It also produces resilience in so far as the system is less likely to be reliant on narrow supply chains or markets.

How diverse is design in the region? Is diversity important?

To explore these questions we drew on information, experiences, ideas and opinions the designers who took part in the survey, the interviews and the focus groups, had shared with us.

We found evidence that designers add value in a very wide number of market sectors and that they value diversity in the disciplinary backgrounds of their talent base.

Designers in the region have clients in broad range of industries and locations, as is evidenced by the interviews, and the Enterprise Imaging analysis. The survey results identified designers working in 59 industry categories. This diversity is essential to the sustainability of the ecosystem, as reliance on a limited set of skills for a particular industry within a narrow geographical location could endanger the whole system, should that industry collapse or the region suffer a recession.

The diversity of designers' individual backgrounds and experiences is also important. Our results, when we looked at the social diversity of the design community, were less encouraging.

A designer's role is to understand a client's needs, problem solve, and to communicate messages to consumers. The more diverse in terms of background and experience designers are, the greater the potential for understanding the client and the richer the solutions generated. One designer from a large engineering company in Bath commented on the importance of recruiting graduates from a wide range of universities.

I think the diversity is important, we don't just want to get people who've come through the same academic training, because that breadth of view, that breadth of experience, the mindset they develop through contact with the different lecturing staff is part of the life blood of us just thinking a bit differently and being a bit different to the norm, getting those creative ideas that otherwise we wouldn't see because they are always coming down the same stream. So, it's a deliberate policy to recruit wide, certainly nationwide.
– Engineering Designer, Bath

However, encouraging social diversity in design education and training is a challenge. Not all of the designers interviewed discussed their early years' influences or parents' occupations, but two thirds of those for whom we actually have data on routes into design had some kind of family background or connection in design. Eighteen had fathers who were designers. From the survey, 18% of the respondents said their decision to go into design was influenced by family or friends. These are startling findings, suggesting that design reproduces itself through a very narrow distribution of cultural and social capital.

Designers are primarily motivated to practice design for personal fulfilment satisfying a need to understand the world and to communicate or express their understanding to others. Exposure to design and encouragement of their interest at a young age is a key factor in a designer's choice of career. For children who aren't introduced to design by a family member, school is instrumental in introducing children to what design is and to the role of a designer. For some designers in our data school was important in establishing their orientation to design. They remarked on being introduced to design or being encouraged in their interest by a school teacher; or on being only good at design-related subjects at school, making design the obvious choice for further education.

Findings like this suggest that there is further work to be done in schools to a) establish design as a viable career path and b) encourage a much wider range of talented students to start to identify themselves as designers.

The lack of social diversity among our sample of designers is echoed in the equally marked lack of ethnic diversity. 86% of the designers in the survey self-identified as white British. Perhaps not surprising when a survey of graphic designers (2015) showed that 88% of the 1,321 UK respondents were white British.

What is the effect of this apparent homogeneity in ethnicity, class, and educational background of the design community in the region?

It is a community. You can't ignore that it's a community and there isn't anonymity –your name and what your decision is, are going to stay with you. Your reputation is quite important and you know it. This is not a corporate environment whereby you're anonymous and you can move freely between organisations with nobody really knowing or connecting. If people move practices, they always know about each other.

– Architect, Bristol

The Designers' Voice

We heard the voices of almost 300 designers from the region. Their experience of living and working in the region, their ideas and opinions, their specific but varied perspectives, their vision: all were important in helping us consider the question of value, and identify some of the key contextual factors that interact to support or undermine successful design enterprise.

The designers' responses to a range of questions were gathered from 75 interviews, three focus groups, 29 telephone interviews and free responses in 155 online surveys.

DESIGNERS ON PLACE

> *I describe it as the California of the UK. I'm messing about but I always tell them it's the California of the UK. I also tell them it's the most plainly intelligent place to live in the world. And they say 'Why, why is it the most intelligent?' I say well because it's a great city it's got huge culture, it's vibrant and it's got access to this wonderful countryside. I can be surfing in 2 hours, I can be going for a cycle ride.*

> *Network and relationships are key. I worked in a shed as an architect. In Warrington. And it was awful, it was just awful. And we all used to go for a little walk around an industrial estate at lunch, thinking about how much better life could be…But actually, it was counterproductive for a creative role. There was no stimulant. You couldn't see anything, you couldn't hear anything…As an architect you're there to design places…In terms of a people subject that design is, you need to be near other people. And that's why the community's important… I think dialogue is really, really important. People want to see, touch, feel, hear, smell. You know, the emotional response to things drives a response to what you're creating. Really fundamental.*

These two statements (with apologies to Warrington) illustrate many of the themes arising in our analysis of what kinds of things respondents said about the relationship between qualities of place and their working lives as designers. Some of what follows might be dismissed as 'lifestyle' externalities having little or no bearing on productivity. However we would argue that a finer grained reading of the texture of our evidence suggests that we attend to particular qualities of place in order to support a thriving creative economy.

Scale and Spaces

A major category of responses concerned the scale of the cities and the ease of movement they afforded, particularly as regards walking or cycling. This may be a reflection of the high concentration of creative work in big metropolitan centres, the idea that its possible to have a creative job and walk or ride to work appears to be a particularly powerful attractor. Many respondents also spoke about how living in cities with easy access to great countryside was a major attraction to living and working in Bath or Bristol.

> *I quite like that idea that it's really walkable, and you're in this busy almost metropolis if you like, but then within 20minutes you can be in a rural countryside setting.*

> *I don't know how, but it's quite a rural city. It doesn't feel like you're in metropolis. It feels like you can come in and out quite easily.*

When I was thinking where I wanted to base myself, it wasn't going to be London long term, because I'd freelanced there and I just like more the outdoors. I'd been to visit my mate a few times before, so I quite liked Bristol. I liked the outdoorsy aspect of it; the mountain biking was just on your doorstep. Yes, I had some good times when I was in Bristol, so, yes, I was quite happy to move here.

There is a substantial body of evidence from our interviews that has something to say about the precise scale of designers' working environment. The city centres are 'walkable', which promotes an ease of formal and informal face-to-face interaction; the pace of life is slower.

Bath is essentially a town. I mean, you can walk across it in 20 minutes. So, it's got that kind of not rushed feel, until the tourists overwhelm it. But it's got that kind of slower pace.

I came here because my desire was to live in a city of short distances.

The scale of the cities in our survey – not too big and not too small – means that designers can operate in networks, where linkages from neighbourhood to region are a commonplace feature of professional and personal worlds. This sense of the human scale of the two cities is also apparent in what respondents said about the importance of both social meeting places where work can be conducted (ie cafes and bars) as well as social working places that provide network opportunities for 'dialogue' of the sort our architect, marooned in Warrington, felt was so important. Respondents frequently mentioned particular cafes or bars as part of their regular working set up.

Discussing a proposed new co-location workspace in Bath, one focus group participant described the ideal set up as,

...an old, industrial building but, basically, they have pulled in an amazing collection of creative industries including (Famous fashion designer) wood, furniture designers and there's a gin factory. The heart of it is basically a bar and a restaurant and a very communal, sort of, bohemian feel to it. That has a good vibe because they have space where they have exhibitions and things happen all the time. They're by a river.

This sense of the importance of the social geography of creativity that supports design workers is also present in this prototypical account of how a new designer arriving in the city is able to negotiate a working life through accessing a succession of porous spaces,

And so I moved into the Dispensary, and that was basically the big change for me, in terms of social life in Bath, but also opportunities. I met loads of people who worked in, you know, either had work for me, or I could give work to. It was a real eye-opener for me. And also allowed me to actually go out to work again, which was nice. You know, I'd been working in my basement for years, or my small study. So it was nice to actually be able to get out of the house.

There has been, historically, a good supply of co-locative working and creative studio spaces in post-industrial properties in Bristol though conversion to creative re-use has been more gradual in Bath. It remains to be seen if the impact of recent increases in the cost of owning or renting property will diminish supply. Certainly protecting the supply of low cost post-industrial studio space is a key role for local authority planners seeking to support a healthy design infrastructure.

What about London?

By far the biggest proportion of the UK Creative Economy is transacted in London. The dominance of London in creative work extends to the design industries. All regional creative economies have to develop a strategic relationship with that dominant market place. Designers located in Bristol and Bath were no exception. It is clear, from the many unsolicited references to London in the interview data, that the sense of its 'gravitational force' is experienced powerfully by the design community in the region as both push and pull, positive and negative.

[Bath and Bristol] it's also a really well-connected area, in terms of connections to London. For the entirety of my career, I've typically commuted backwards and forwards to London intermittently through that whole period. Still, even now, with the types of project we are involved in in Bath, London is very much a centre of gravity, from the point of view of legal expertise. Some of the design expertise, architects, engineers, development professionals we use are still, to a degree, based in London, even though we buy locally as much as we can.

The response of this landscape architect typifies the region's tactical relationship to London: the travel time (100 minutes from Bristol, 90 from Bath) is short enough to maintain working relationships with the London market, which produces income for the region. (Though the cost of early morning train fares - £180.00 peak time - was a repeated complaint). However the interviewees also expressed the desire the 'buy local' as much as possible.

The fact that London is an accessible client market, as well as a site for talent and expertise was recognized as a major advantage by many respondents, typified in comments that simply acknowledge this as a geographic reality of working regionally:

> *…the clients tend to prefer it in London. Because it's easy for them. And the artists, as well, we get a better choice of actors if we' re recording in London.*

However by far the dominant tendency in the interview data was for respondents to discuss London as a negative to Bath & Bristol's positive qualities, especially in relation to quality of life. Perhaps the major feature of many of these comments is the way that Bath &Bristol is perceived as a second stage life destination for creatives who have worked in London but want a different kind of life, especially as they get to the stage of having children.

> *There is a pattern, yes, and there is that young family kind of idea about relocating to the South West. We do reasonably well from those people who are relocating out of the London market for lifestyle reasons, so that children can have more space to roam.*

> *Compared to, kind of London culture, if you've left before seven you're obviously a wimp, and most people are there at like nine, half nine, ten, where it's all about the work - it feels like Aardman upholds that quality of life of, 'you' re here to work, but then go home and walk your dog and hang out with your kids.*

In addition there was the lower cost of living and working in Bath & Bristol rather than London, and less time getting to and from work:

> *I think they want a different lifestyle and I think they want somewhere that's a bit more affordable than London. If you think about what London has become over the last 15-20 years, it's been out-priced by Russian money and everybody's pushed out into the suburbs. Maybe people don't want to travel so far to work in London. The best work is still there; we' re not far behind, so I'd much rather live here and pull the work out of London, personally, than go and live and work up there. I feel like I've sort of done that. I'm still very ambitious; I want to do the best work, but there's also the fact that my kids are here, they are in school, and I love the city. I want to promote that as much as possible. Now we shout about Bristol, rather than trying to hide the fact.*

There is also a strand of evidence that understands Bath and Bristol as being a good place to take risks, experiment and risk failure exemplified by the following perceptions:

> *There's obviously something happening, specifically within digital music, obviously, but within digital there is something very interesting happening. I think the regional support is phenomenal. If you want to make new things, entrepreneurial things, then you do have that support. You wouldn't get it in London, so if anyone's starting up a business or wants to try to do something a bit new, I'd suggest they left London and then went to Bristol, for example, so that they're able to access the kind of funding that you don' t get in London. It's slightly more open; London is very cliquey, very closed.*

High profile creatives

High profile creative enterprises with international brand names, notably Hewlett Packard, Aardman Animations, Dyson and the BBC Natural History Unit were mentioned as important to the region. Aardman, for example, are perceived as being 'good for all of us' (in media).

> *I do think there's a real benefit to the fact that we do have Aardman here, because it's so inspirational, it's so good for us in TV to be looking at them. And they' re very closely linked with UWE, there's a lot of talent movement between there, which helps all of us. And I think that's a really useful thing.*

Similarly the Natural History Unit at the BBC established a talent constellation with specialist expertise and plant in the region. An interviewee explained how one company came to be located in Bristol.

> *Tigress Productions is quite an old company in terms of production companies. It was started roughly twenty years ago. And it was formed as an offshoot of 'Tiger Aspect Productions' in London as a natural history production company…At that time, it made sense for it to be located near to the Natural History Unit of the BBC. So that we could share stuff. Because there's a quite small group of people with the required talent, experience and knowledge of the natural world. So it makes sense to sort of form yourself quite near to where there's a big bunch of those people. The Natural History Unit at that time, was more or less the only one of its kind in the world. So that's why it started in Bristol .*

Quality of Life

One of the biggest categories in response to our probing on the specificities of Bristol and Bath as a region for design was the quality of life that the region has to offer. Clearly these responses overlap with the category of collaborative networks and some of the more specifically physical characteristics of place. However here we have tried to isolate and analyse the more abstract qualities of the region that the design community experiences as a strong positive attractor.

The most common kind of response was praise for the cultural resources of the city; not just the music, gallery or food scene in the region (though these are part of it) but the wider sense of how people experience the mix of available cultural resources,

> *What I like about Bristol and what I've found is the understanding of the people of Bristol, the liberal nature of the city and the intellect concerning either cultural values, or food, or politics. Really, you can't hear that or see that until you go somewhere else, and then you think, 'Wow'. Bristol has got something that I think has been building up over…since sort of like the '80s, I think, through certain avenues. I think it's bloomed into an amazing city.*

> *So Bristol has got this kind of rather ugly, shitty side to it, and I quite like the contrast, and I like the…it's not London, but there's a pulse.*

Responses to Bath were equally positive but for different reasons. The city also perhaps defines a market, a clientele:

> *…it's that leading trend kind of vibe which maybe other cities don't have if they're more industrial. I mean, I always look at it that Bath's always been a really rich place, everyone's come to play here since the Romans and that's where designers look for the cutting edge, the high end stuff.*

> *Because, and this is something we always had in our mind, it's such a beautiful city, it's a great, why not make a weekend of it, or a day of it. There's so much to see, it's a really just positive, lovely, happy, feel-good place to be I think. Everyone who lives here really likes living here. They're all proud of where they are, so, you don't get that everywhere.*

DESIGNERS ON COLLABORATION, CAPACITY AND COMMUNITY

Generally, the spirit of collaboration and coordination is really strong in Bristol. That's a really strong thing. I think that runs from kind of very small musical club nights, up to huge kind of creative partnerships. I think that's definitely a thing in Bristol that I've noticed, actually.

The key feature of a cultural ecosystem is the nature of the relationships between the agents in it. Each actor in the system will give to and get benefits from their environment. A clear and strong strand in the data was respondents discussing the ways that their professional and personal networks created a richly collaborative set of relationships. We have identified the salient features of these exchanges in an attempt to elaborate what kinds of exchange constitute the regional design ecosystem.

Capacity Webs

The rich web of relationships between different design firms, different sectors, markets, clients, places of work, friendship networks and professional support organisations produces long term capacity for the design industries in the region. At one level this can be understood as a classic example of a cluster of co-located enterprises building capacity over a long period of time:

> *I mean, the aerospace industry is quite tight-knit. A lot of people, once they' re in the aerospace industry, they stay there their entire careers. Not necessarily with the same company, but they stay in that same industry. So you might have, you know, a guy who was working at BAE, who then went to Augusta Westland worked building helicopters, and then moved to GKN, and then made the move to Airbus… So –so a lot of that retained knowledge within the people it's a kind of network effect for the South West.*

These human capital networks can also produce resilience and innovation. Here a respondent recalled the way that the creative and design community responded to the redundancy of half the Hewlett Packard European research lab in Bristol in 2008.

> *A lot of people left. What was really nice was the community strongly came together to say, 'We don't want this talent to leave the area. What do you need to help set yourself up as an independent, find other jobs? What can we do to hold you in this area?'*

Findings / The Designers Voice

This response led to re-employment or new start-ups. This long term capacity building, exchange and self-consciousness has also had the effect that design is slowly increasing its ability to sell itself within the region,

> *I think that might be putting a finger on a little bit of the change since twelve years ago -which is only a short time ago, really, since I've been doing this - the communication about what design does and offers has become more articulate. Yes, I think that might be quite a change that I would have perceived.*

Design is Social

Design adds value to services and products through discussion, conversation and communication aimed at problem solving. As a sector it has a high intensity of intrinsically necessary communication. This is well illustrated by this architect discussing the necessity to explain to domestic clients the design function of architecture,

> *I think they're expecting, you know, the architect's just going to do this extension. So, it's also an education with the clients, because they don't really know what an architect does. So each time you get a new client, you explain the process, they might think, oh, you're just drawing these plans up for planning. Don't realise you've got to design it first.*

These discussions create a strong network of local client relationships. He described their business:

> *...a hundred percent of our work [is] in this, in this region. And a lot of it, you know, in this village for instance, I've most probably done twenty projects within the village, walking distance away! So, I think I've looked at every house since I'm the village architect.*

In the micro and SME business space, this intermeshing of personal and professional networks came up repeatedly as a feature of the Bristol & Bath design environment. This is particularly true of smaller flexible businesses with high rates of self-employment and freelance working patterns: here we encountered numerous accounts of work arising out of entrepreneurial activity in social and informal networks. The net effect of all these 'little opportunities' is to build a 'community':

> *So actually, there was a real good community of those people. It became like a family of people who were aware of the value of the design intervention, and what it could do for the businesses.*

The community builds and monitors itself:

> *In Bristol, people like to use people in Bristol and kind of keep it, keep it in the sector. I mean it's kind of like the Bristol pound. People use artists like that to keep the - the creativity in Bristol going, like a forward motion...*

The community is personal but based on reputation:

> *It is a community. You can't ignore that it's a community and there isn't anonymity -your name and what your decision is, are going to stay with you. Your reputation is quite important and you know it. This is not a corporate environment whereby you're anonymous and you can move freely between organisations with nobody really knowing or connecting. If people move practices, they always know about each other.*

Community hubs

A community manifests and sustains itself in different ways. In Bristol and Bath the sense of community is frequently associated with particular places and specific professional support networks. The Arnolfini, the Architecture Centre, Colston Hall, Watershed's Pervasive Media Studio, Spike Design, Creative Bath, Stokes Croft, Hamilton House, Centrespace Gallery and Bristol's Old Firestation development are all named repeatedly as important sites in the professional biographies of the regional design community. These culturally funded and social enterprise hubs all produce long-term value for the design ecosystem in the region. This is a prototypical young designer's story of getting established in Bristol,

> *So [I] just went to Arnolfini, sat there for a while, used that as kind of a safe hub, and then explored. Actually started working at Spike Island as a gallery invigilator, and built up a really nice group of friends there. I was a Spike Associate, which opened up a network of different creatives and artists. I' m also a member of the print studio here, so it actually ended up that Spike Island was a bit of a hub for me in terms of a way in, to friends as well as work.*

The importance of these design positive spaces was linked to a wide range of design support professional networks which our respondents referred to repeatedly as key sites for professional networking, for securing new business, for continuing professional development, for peer to peer critique, and for friendship. These networks in our sample included, events at the Architecture Centre, First Fridays, West of England Design Forum, Bristol UX, Bristol Media, West of England Aerospace Forum and Creative Bath.

Sociability, friendship and professional networks, design-friendly meeting places and spaces were all crucial to an industrial sector that consists of growing numbers of freelancers, micro business, short-term contract work and flexible employment.

DESIGNERS ON LEARNING AND SHARING

If groups are going to collaborate rather than compete then they have to adopt a different approach to what kinds of intelligence they share and what they guard and protect. The evidence in our interviews is that peer-to-peer critique and an open sharing of approaches and tools characterised the design networks in the region. There was, however, an understandable wariness about what exactly is shared especially around the pricing of services. Exactly what is shared also varies according to sector and scale.

Keeping on top of professional intelligence is a key life-long learning commitment for design professionals.

> *And that can be from going to conferences; that can be from speaking to peers; that can be from looking on social media; that can be from reading blogs. And then what you have to do is you have to look at it, you have to analyse it, and work out what of it works for us, what of it works in our context, with our clients, and our proposition, and our business, and where we want to head.*

Whilst the picture is not thoroughly consistent there is some evidence that peer-to-peer sharing is an important process for creating that shared know- how capacity:

> *...no big company, or no established company, is ever going to steal or copy an unproven thing. They' re going to wait for you to prove it, and then they might... but, by then, it's a completely different, challenge and a different problem. So, if you' re open with the idea then you'll get the help and you'll make the idea better and less, less easy to steal in the future.*

In the start-up and design agency creative digital part of the sector the dominant attitude moves toward the position that sharing will improve processes and therefore the value of your design product in the market place. These practices are a conflation of traditional art school 'crit' culture where creative work is subjected to the public critique of tutors and peers, and of the newly agile practices of design in which iteration with users within a peer-to-peer development environment is increasingly common.

However as firms get bigger and more specialised the nature of their collaborations become more technical and more precise. We heard for instance of a major media post-production company sending staff out for free to advise a smaller outfit on what post-production systems they should implement in order for them to be compatible with the workflow of the bigger company: a kind of free service that also becomes market development. An architect commented on similar potential benefits of collaboration that might accrue from a move to standardise computing platforms:

> *Oh, it would be a great benefit. Yeah because you could, socialise, you know. And perhaps get into co-operations with each other, to look at the bigger projects, maybe you could work together if you can make sure the systems work in terms of the IT and the CAD, the computer- aided design.*

The best account of this form of design collaboration as product development is offered by an engineer talking about the company's relationship with its major local client, Rolls Royce:

> *These kind of companies, the links go throughout the different levels of the business... When a need is identified in a very large organisation, ...on a new engine line, say, at Rolls-Royce, we'll tend to work with them to understand the needs and design products based on those needs. And then therefore our design departments are working with their design departments and collaborating and, sometimes, I hope, we influence their design and they influence our design such that the end result is a better product for them and for us. So we work together, so we do have, loosely, I guess, partnerships with many very large manufacturers in that sense.*

Universities

Some respondents showed a strong awareness of the importance of the regional universities for talent development. Importantly they thought this awareness was maintained as a function of the networks of individual relationships between makers, designers and teachers in the region.

The majority of comments were in relation to the production of talent; the regional universities are clearly seen to have a major role in maintaining the talent pipeline for a successful design sector.

> *How can you be a successful design company in a region? To do that you have to be a specialist but you have to grow your own people. It's that combination of Bristol lifestyle and attributes, working with taking very talented people from educational establishments and growing your own.*

Whilst recruiting talent is the key function of the relationship with Universities it is also possible to see in the data that this is also a sub-function of the rich informal networks that have been built up between academics and industry over the years. For example, a design engineer told us:

> *I also now mentor students coming out of, coming out of the university, who have got an interesting idea. [Name of Tutor], at Bristol, has sent me a few students, saying ' these guys have got an interesting idea, you know, just have a look, see what you – give them some advice if you can.*

These networked patterns also extend to using the intelligence of recent graduates for recruitment:

> *We have good relationships with them and we look to previous students, actually, to help us to recruit. That works well because it is based on partly the relationship and knowing who the good students are, because we're obviously aiming at the top students rather than just a volume recruitment.*

Six of our industry respondents also talked about having had or having continuing part-time teaching roles or 'guest lecturing' at local universities and the way that this helped them stay in touch with the emerging talent pool.

In the design engineering sectors there was more of an awareness of Universities not only as a talent pipeline but also a site for research collaboration. Working with PhD students on collaborations with staff on research projects was seen as an important source of research and development for the companies. Designers also talked about the influence of being involved in collaborative hi-tech design projects with Hewlett Packard and UWE Bristol.

Alongside the positive aspects of contact with universities, respondents also pointed to drawbacks in the university system and impediments to working with HE institutions.

> *I think universities are tragic places, in a lot of ways, in terms of their ability to break out of silos. I think [this] also comes from things like the research councils, which are very siloed.*

Another design agency respondent offered an even more trenchant critique of the University's capacity to do business with the sector:

> *They have just as much problems with the egos, and the silos, and the difficulty they have in backing one horse because that's doing well, because they have to deal with the poor horses who are clopping along and aren't doing very well. …Any business would say, 'That's been good, put money behind it. That's not doing so well, it's make or break. Either raise your game, or we're pulling you off, we're not going to suffer poor performance.' You know, we have a 200-year-old, 300-year-old academic system that's really finding it difficult to break out of that, I think.*

This room for improvement was also reflected in some harsh words about Universities' position on Intellectual Property. A respondent from Aerospace design for instance took the view that despite all the upsides to working in Universities their compulsion to take an IP stake was counter-productive,

> *Well it's kind of a double-edged sword, to be honest. I could say all of the positives and list them all …you get access to the world's leading research, you get access to the universities and their links and you get into a network. So there's all the positives from that side…There is, there is one downside and I think it's a downside that probably prevents much more interaction with universities than…than we currently do. And it's because of the IP position from universities. It seems really counter-productive to us that the universities should take an IP position, which is, you know, counter to industry.*

DESIGNERS ON VALUE

How is design valued in the region?
What value does design give to the region?

Designers were not at all sure about how the region valued design. But they were very clear about the value of design, from their perspective, and about what it brought to society and to a company or a project. They referred to the value of design as a process, as a tool, as a means of communication, and in the value it added to the experience of the consumer.

> *I think the notion of design is key and is fascinating. And it's the best of humanity. The idea that you look at the world, you analyse it to find a problem, and then you come up with a solution to that. That's just what humanity's good at…And I think that there's just not that many of us get to do that now. But all of the greatest achievements of our species have been design solutions.*
> ***– Furniture Designer***

> *Every new product we make is, is designed. So design is absolutely key. If we didn't have new products we couldn't function… So design is a hundred percent.*
> ***– Engineer***

> *What percentage of my work do I think is related to design? All of it.*
> ***– Events Company***

> *Without design we wouldn't have a business. I mean, it's the way that we approach what we do that sets us apart.*
> ***– Events Company***

> *It's really important, I think the way that a catalogue designed… I think it's the difference between people buying or not buying.*
> ***– Designer in publishing***

> *If it's not designed well, it won't be desirable and when it's not desirable, people won't want it. And then it's a valueless thing.*
> ***– Textile Designer***

> *If the website didn't look on brand and wasn't innovative and kind of tech advanced, then it wouldn't add up and people wouldn't trust it. People are getting in these cars, they need to have that reassurance that it's an established company and we create that, we create the vision, which is supported by the technology. Invaluable, without it, you would not succeed at the end.*
> ***– Designer of a website and app for a minicab company***

Value as net benefit
Design work benefits the client or company and consumer. Net benefit could be measured in terms of a client's increased turnover or growth. Many designers considered net benefit as the measurable economic value of design. However tracking this data is labour intensive and requires the cooperation of clients. A number of designers expressed frustration at the difficulty of explaining this to clients.

> *Design, if it is to be valuable, delivers increased business. It delivers increased orders. It delivers brand profile. It delivers more wealth back to the business.*
> ***– Graphic Designer***

> *What we try to do is understand their business or their financial model for supporting it early on…We, therefore, are able to say, 'Well, look. This is the kind of outlay you're going to have now. Whilst that might be a bit more than you were anticipating, this is the anticipated payback or return or value of your investment over five years… Isn't that worth it?'*
> ***– Architect***

> *If you get the design right early on, it doesn't cost a lot, but it makes the difference early on. So instead of you tacking off in the wrong direction, and then having to make a massive course correction because you've got it wrong, or … you've got it on the market and it doesn't sell, you're actually fixing it early on. So I think that's what we try to get into the heads of (our clients).*
> ***– Product Designer***

Value realised in use
Design also has a value that is realised in use. This can be by the client and the designer as they work through the design process, and by the consumer when they interact with the designed object or service.

To the client and designer, design has value as an iterative problem solving process, that ensures the outcome is right. One designer likened the iterative design process to going round the thread of a screw, another aspect of design difficult to justify to the finance department.

> *Now, unfortunately, what happens is the accountants of this world look at it and say, 'Well, that's a waste of time, isn't it? Why did you have to go round a dozen times?…Why didn't you get it right first time?' They completely miss the point that every time you go round, you learn something. Because, maybe when, when you get round and you check, you go, 'Did this work?' Maybe, maybe it's as simple as saying you got it wrong. But maybe your question was a stupid question. Maybe what you decide was, 'Hey, I asked the wrong question there. I need to change the question a little bit'.*
> *So, every time you go round, you get smarter. And if you don't go round the loops enough, you just end up with a rubbish product.*
> *So, there's a real balance here… how – if you haven't got it wrong a few times, how do you know it's right?*
> ***– Engineer***

Similarly a designer in marketing described spending time questioning the client to clarify what is unique to the company so that it can be communicated.

> *'The designer is enabling the proposition to come across. The client's telling us about all this stuff they passionately believe in and we say 'So what? It's a cynical world out there. They don't give stuff about your company. So what is it that you are delivering to them that's going to make their lives, their business, their thing better.'*

Another engineer identified value in design as the quality that distinguishes his company from its competitors, and as the foundation of its international reputation. He claimed that the company appeared least competitive when bidding for a piece of work where the only differentiator was the price, but came into its own when the differentiator was knowledge, experience and willingness to take on a design challenge:

> *We're at our best when somebody says, 'I have got this great idea for something, and I want to hang it from sky hooks.' And we go, 'Really, right okay, let's think about that.' Whereas most people would see the risk that's involved with that and run a mile because it immediately puts you in unfamiliar territory, and if you're on unfamiliar territory you're starting from first principles and it's very difficult to price something like that and provide a good service. And so a lot of our competitors step back, whereas they look at our portfolio hungrily and would give their right arm for it, though wouldn't necessarily want all the risk that goes with working in that environment.*

Value here is being co-created by the designer and client through the design process.

The use value of design is also realised by the consumer when engaging with an object or service. This may be through the feel of an object in the hand, or the experience of being in a designed environment. This designer describes designing furniture for a university:

> *It's again solving a problem. What you're looking to do in a university is create an environment that actually stimulates learning, and*

> *stimulates creativity, and stimulates an environment where people can actually express themselves, and that's not just about the academic rigour that they go through. It's also about the environment that they sit with, and everything influences that… We spend a lot of time researching that, understanding what environments work.'*

Similarly, for a games designer, the experience of the end-user is paramount.

> *Our prime skillset is designing these experiences…designing a core experience that is going to deliver a kind of emotional return. So, we want you to feel this way, we want you to think this, think about these things, we want you to be able to do this thing, or to react in this way…and then we structure that around a series of smaller interactions.*

What value does design give to the region?
The perceived benefits derived from design companies included employment and providing work for regional third-party services. But a number of companies identified a more hidden value: that gained through attracting visitors for overnight stays in the region. For one engineering company their clients' business trips contributed significantly to the local economy:

> *The Norwegians were over here very often and we discovered they loved coming to Bath because it's a beautiful city… I think that project alone probably contributed tens of thousands to the economy of Bath, because they were staying in a five-star hotel. They certainly liked their drink and their food so they were certainly frequenting the pubs and the restaurants and so on. There were half a dozen of them here, at least half a dozen times over the course of the project. So it's stuff like that that is invisible, but without us and without that project, it wouldn't be here.*

Event companies also bought large numbers of ticket holders to their shows, to the benefit of regional hotels, cafés, bars, restaurants and tourist attractions.

> *We sell a lot of our tickets to our events… A lot of people come and visit the region from outside the region, so for example, 60% of our sales for [our regional events] come from outside of Wales and West… We get 30,000 people buying tickets to our event.*

Engaging with local schools and universities, providing an introduction to design for school children, work experience for students, funding PhDs and offering opportunities for collaboration, are other ways in which design companies give value to the region.

While engagement with education was talked about by designers across the sectors, it was particularly noticeable in engineering. The majority of large design companies in the region are in the engineering sector and it is large companies that have the capacity to co-ordinate and fund this type of involvement. Engineers in our study felt that school education is currently failing to inspire future engineers, and so they are actively taking steps to encourage young people into the profession.

> *I'm appalled at the way we inspire people to come into design in this country. And I look at the way talent is being nurtured in other countries and think, 'What are we doing?'…We have kind of turned our back on the process of requiring the skills that go into making… like we've put them in a blue-collar wrapper, and said, 'That's not what you should be aspiring to do.' And that is ludicrous, because that's not what other countries are doing.*

Engineering designers also expressed a sense of a responsibility in using their skills and experience to address the problems that the world is currently facing, and to influence government and society. One engineer, an employee of a large company, talked about the activities of the charity his company funds:

> *Typically the areas we would get involved in, the three key areas are urbanisation, the migration of people into cities and how do cities cope with that need for greater density…We can talk about energy, water, land, money, atmosphere. A lot of these things that are facing society, engineers have a certain responsibility, because they hold the keys to solutions. The government will stand in the way of the solutions, but it's still an engineer's responsibility to influence government, society, to do the right thing.*

Through discussions on the way design itself is valued on a regional and national level, it is clear that some designers feel the status of design was lower in the UK compared with Europe and America. It was suggested by three interviewees that a study such as Bristol & Bath by Design would not be necessary in Europe, as the value of design was understood by the general population.

One design advisor remarked that the government's undervalue of design was shown in the reduction of funding for design support. The same sense of undervaluing and under-representation was felt at a regional and local government level too, due in part to the fact that design itself is a hidden process, hard to define and whose value is difficult to articulate.

> *I think that's one of the pities, from a regional economic growth point of view- you know, where do you find those champions [of design in the region]… I think, you know, if you went into Bristol Council, I think you'd find people who pay lip service to it, but I can't think of anybody off the top of my head who I'd say is a champion for it.*

Bristol & Bath by Design set out to understand how design creates value and the types of value it creates.

Designers of all kinds across the sectors had a shared understanding and were passionate about the value of design as a process and as a tool for creation and communication. Rather than offering an easily quantifiable value, they talked about the net benefit to the client and the use value to the client and the consumer.

Their responses provide clear evidence that designers do not create value in isolation but co-produce value with their clients, as part of an enterprise with a number of stakeholders.

That's what design is about. If you go back to the roots of design, it's about experiment, and don't worry about failing.

- Engineer, Bristol

The Design Businesses

MICRO DESIGN BUSINESSES

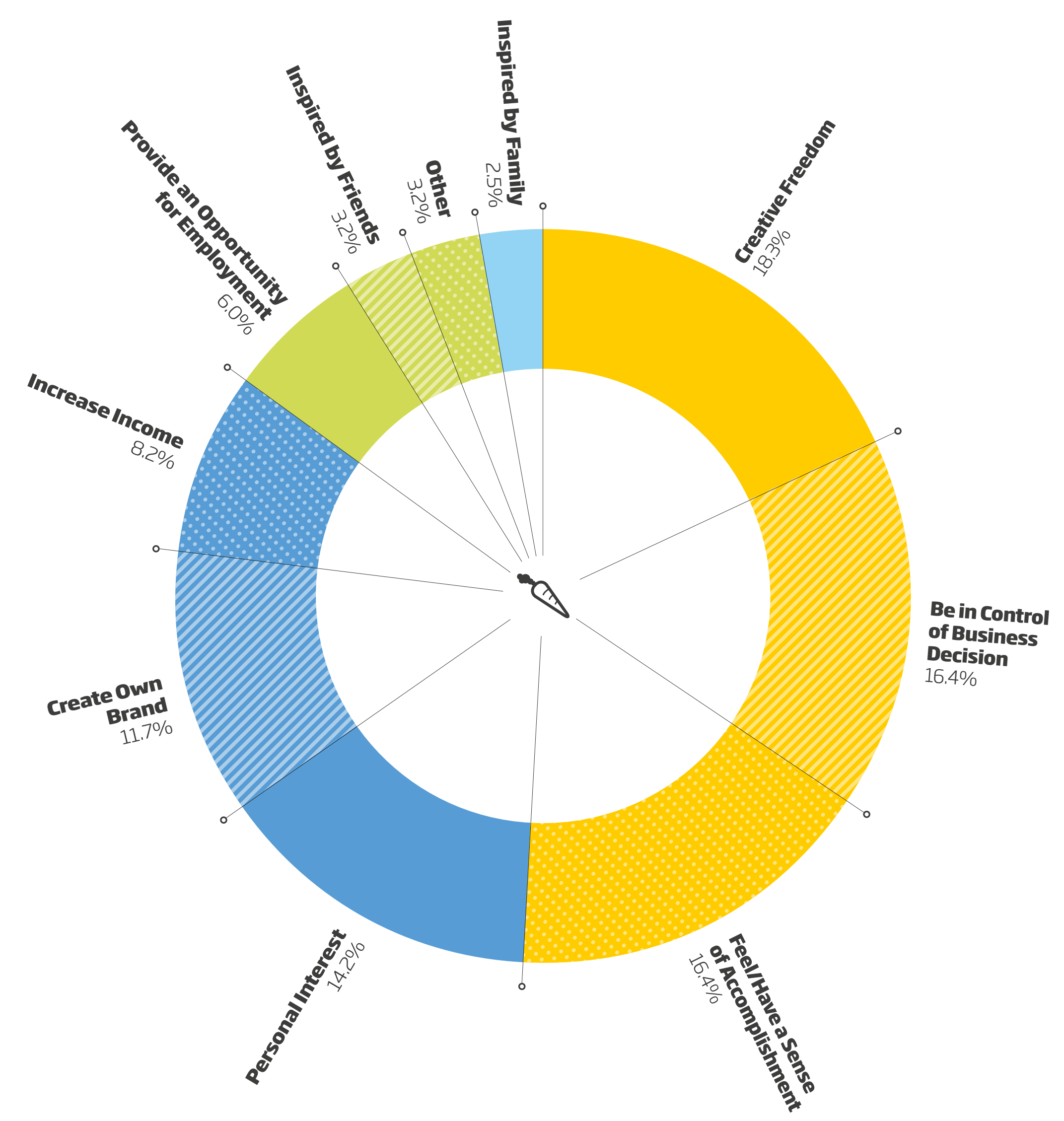
The online survey provided data from 155 designers who had their own design business. A majority (86%) of these had fewer than five employees.

Two thirds of their businesses had been established in the region for more than seven years. The rest for less than three years.

Turnover of these organisations ranged between £5,000 or less (13%) and more than a million (7%). Almost half said their turnover was less than £30,000. Slightly less than a third put it at between £70,000 and £250,000. Almost all were positive about the short-term future, anticipating that their profits would increase in the next three years.

What motivated you to set up your business?

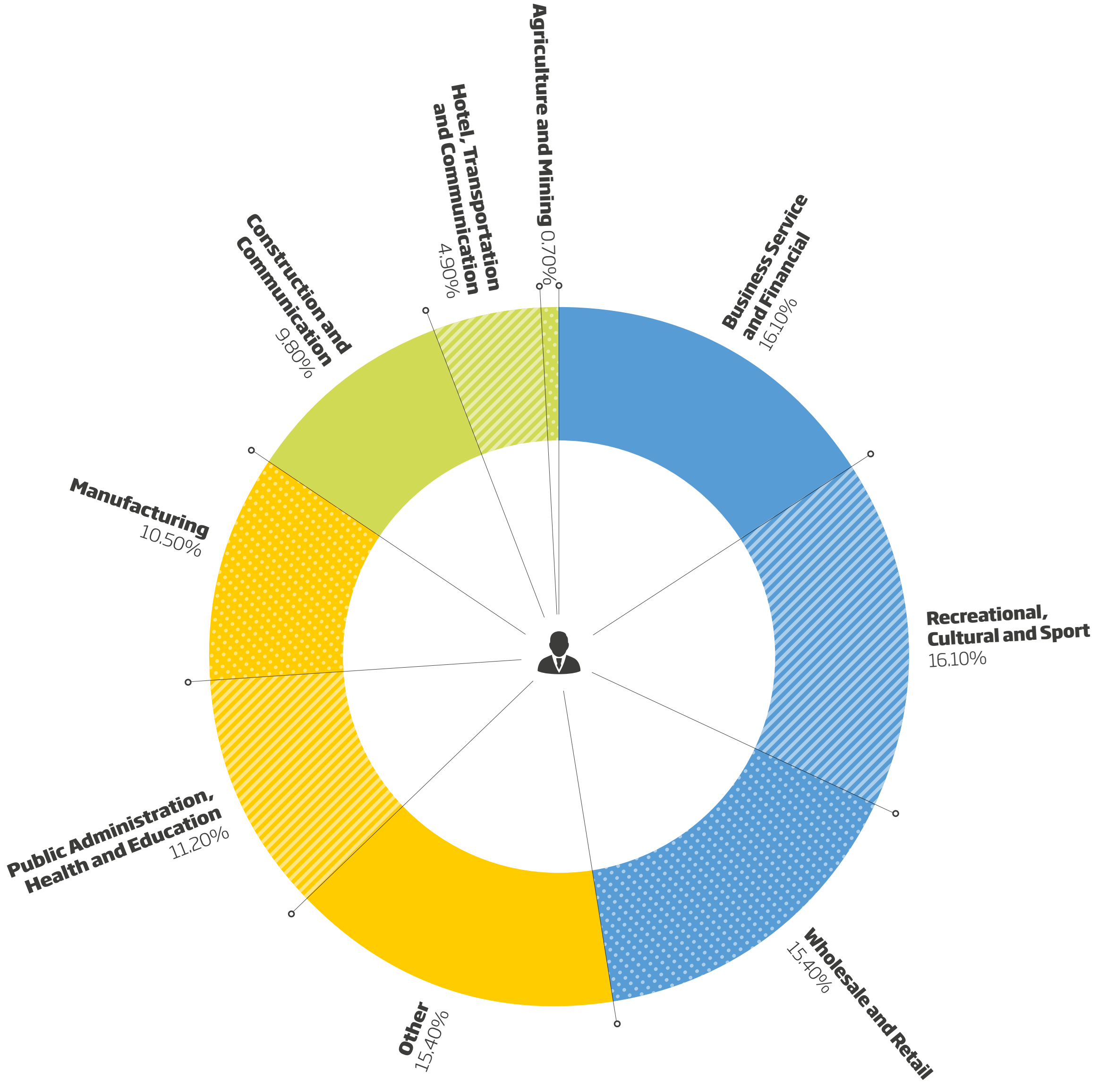
Reasons for setting up in business reflected those given by all designers for wanting to work in design: personal motivation, a sense of accomplishment. These explanations were selected by more than a third of respondents. In addition there was a strong sense of wanting to be in control; a desire for creative freedom and the opportunity to create something individual, their own brand. Motivations related to money were relatively infrequent. Other reasons offered clustered around quality of life and family: securing flexibility, work/life balance. Two respondents suggested it was a way to ensure they were employed, and another as a defiant response to having to go to London to get a design job.



Findings / The Design Businesses

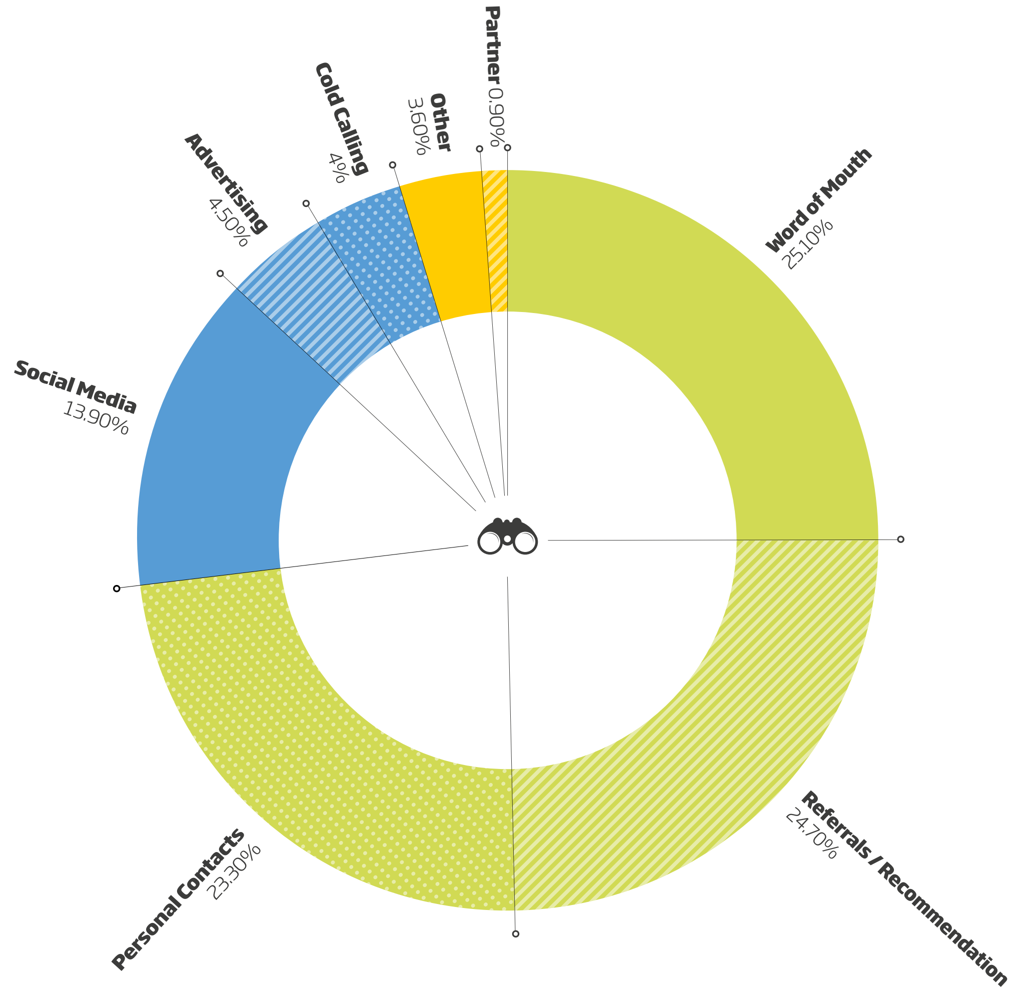
Why did you locate your business in this region?
Interestingly the reasons offered here also reflected the responses at the individual level. Quality of life, family and friends, being from the region or wanting to stay having come to study were cited by three-quarters of respondents. The identity of the region, it's reputation for business, the availability of employable talent, opportunities for knowledge sharing and exchange, having similar businesses nearby: these were mentioned by relatively few respondents.

In which sectors are your main clients based?
The businesses had a wide range of clients from 59 industry categories. Here they are grouped in nine broad categories. The spread is relatively even suggesting that these design businesses operate right across the economy of the region.

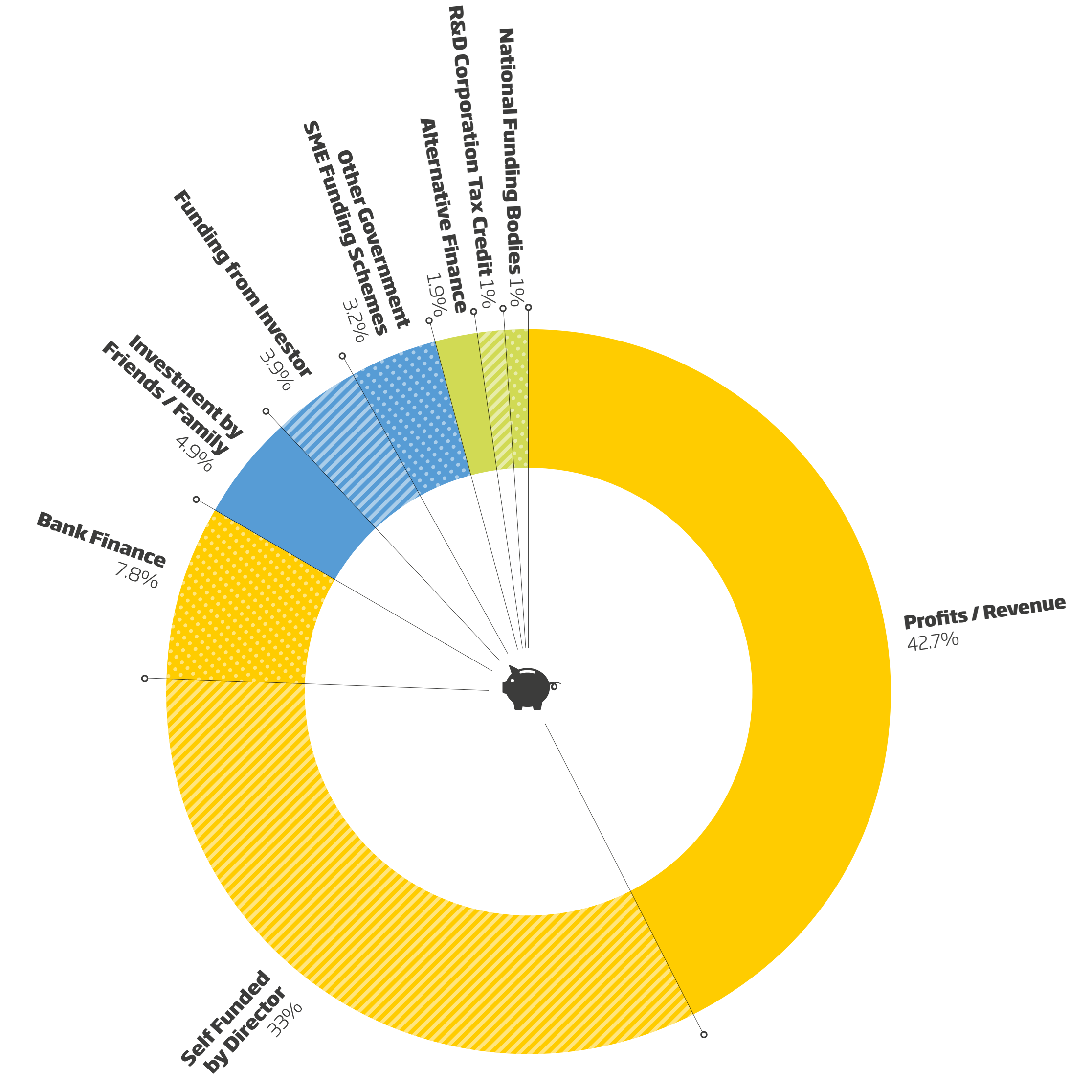


Findings / The Design Businesses

How does your business find its potential clients?
Personal contacts, referrals, recommendations and word of mouth account for three-quarters of responses. This suggests a self-contained, self-sufficient environment whose members are reliant on their reputations, their contacts and networks. Relatively few respondents recorded methods for actively seeking clients.



What are the main sources of finance for your business?
Three quarters are either self-funded or resourced by revenue and profits from their own activity. A small number are financed by a bank, fewer have outside investors, which includes friends and family. The number of businesses benefiting from national, local or government funding schemes or tax concessions is also small.



LARGER BUSINESSES

To expand the results from the online survey, we undertook telephone interviews with a smaller but focused sample of 29 companies in the Bristol and Bath region. A large majority of the businesses had been established for more than 10 years.

Company turnovers ranged from £101,000 to over £2 million. Nearly 33% were between £501,000 and £1million, and quarter 25% between £251,000 and £500,000. Two were in excess of £2million.

Sectors covered

Building/Construction	**5**
Branding,Print/Digital	**5**
Engineering/Manufacture	**4**
Content, Music/Film/Publishing	**4**
Software, High Tech	**3**
Architecture, Landscape	**5**
Not-for-Profit, Community	**3**

The business of all companies involved design in some way. We asked how design activity was organised and integrated into the enterprise.

IN-HOUSE DESIGN TEAMS

A large majority (86%) of the companies had an 'in-house design team', although not everyone working in this team was in a full-time design role. Over half the organisations with in-house teams had 25% or fewer employees doing a designer role. This percentage increased for companies where design was a core element of their offering.

For a majority of these businesses design was a core competence within their company and this was the reason for the in-house team. Other companies' reasons for an in-house team included: needing close contact with developers, having control of the product, cost saving or cost effectiveness, quicker reaction time to customer needs.

Design work done by in-house teams ranged from simple promotional material to very sophisticated designs for structures, spaces, machinery and landscape architecture.

Designers tended to live locally. 83% of the companies with an in-house team stated that their designers live in Bristol or Bath.

Average remuneration for a Junior Designer was £24,108 per annum. Salary bands selected by respondents ranged between £10,400 and £36,399 per annum. Average remuneration for a Senior Designer was £37,859 per annum. Salary bands selected by respondents ranged between £10,400 to over £52,000 per annum.

One aerospace engineer described how cyclical change in the way that large companies operate requires companies within the supply chain to be flexible

'the big companies are outsourcing more and more stuff, so there's lots of small little design firms, little engineering firms... It might have been engineers that worked in Airbus and then left, and then set up their own little studio, working on a specific aspect of the fuel system, or something like that, and then Airbus will, you know, outsource this to various people. But they go through phases. So sometimes they outsource everything and then sometimes they bring it all in-house. So, it keeps everyone on their toes!

OUTSOURCING TO AGENCIES

Half of the sample used agencies for outsourcing design work. Of these all but one also had an in-house design capability.

Reasons for using outsourced agencies were:

+ Getting help with larger pieces of design work
+ Need for a short-term increase in capacity, specialist knowledge or expertise
+ Cost effectiveness

USING FREELANCERS

Well over half (59%) of the companies used freelancers for design work. A majority of these also had an in-house design capability.

Reasons for using freelancers were:

+ Providing resource to give capacity to meet deadlines
+ Providing specific skills or specialist knowledge when needed
+ Cost effective
+ Freelancers tend to provide a focussed service

Companies found the freelancers that they used mainly by word of mouth, reputation or personal recommendation. Often they had been previously employed, used or were known to the organisations. Over half said they had a preferred list. The rest were open to using new designers for each new project.

Other sources of information mentioned were:

+ Agencies, magazines and trade media
+ The Design community
+ Bristol Media
+ Speculative applications from freelancers

Freelancers were reported as used for:

+ The same work as the in-house team – so adding capacity
+ Similar work to that undertaken by the in-house team and outsourced agencies
+ All design work for the organisation
+ Specialist skills not covered

WHAT IS SPENT ON DESIGN?
Almost half of the companies (14 of 29) estimated that they spent between one and ten percent of their total expenditure on design.

Respondents were then asked what percentage of their turnover is design work that they bill out to clients. Respondents experienced some difficulty in answering this question. This included:

+ Some uncertainty over what was meant by 'design'.
+ Some confusion over what was meant by 'billed out'.

Half of the companies interviewed said that they included all design work in the cost of the product or service their organisation provided. It was not costed or billed separately.

Respondents also raised the fact that some design work was speculative in prospecting for business so 'billing' was not involved. The cost to the company of design in this kind of activity was not calculated separately.

The evidence from this sample of companies suggests a lack of understanding of the importance of considering design costs as part of the overall cost to clients or customers of the products or services being provided.

THE VALUE OF DESIGN TO THE COMPANY
With the exception of one company, all of the companies in the sample thought that design helped to increase their turnover. However they had no precise quantified idea of the financial value this represented.

If you want to make new things, entrepreneurial things, then you do have that support. You wouldn't get it in London, so if anyone's starting up a business or wants to try to do something a bit new, I'd suggest they left London and then went to Bristol.

– Book Designer, Bristol

How do Designers and Design Businesses Work?

To look in greater depth at the role of design in the region we wanted to gain a detailed understanding of how designers and design-led companies in the Bristol and Bath region operate to create value.

We used Enterprise Imaging as a tool in extended interviews with 48 companies, selected to represent the range of design activity in the area.

ENTERPRISE IMAGING

Enterprise Images are described as 'epistemic objects' as they capture knowledge that is created in the process of discussion. The process of constructing an Enterprise Image draws participants into evolving conversations that explore the enterprises in which they work.

We used the Enterprise Imagining tool (Mills, Purchase, Parry, 2013) to map and create visualisations of complex networks. These visualisations enabled us to see how different types of resources interact in design-related enterprises to create value in the form of a product, service or experience. For our purposes resources included skills, knowledge, people, tools and materials.

It is the ability to effectively co-ordinate a wide range of resources that creates value propositions, which in turn provide businesses with their competitive edge. Value in this context, is created within the interactions between participants and as a result of their relationships.

Enterprise images were made in partnership with designers as part of the in-depth interview process. Designers were asked to describe one project they had worked upon and provide details about how they initially made contact with the client, the roles of other employees from within their company, the resources co-ordinated by the client and any other third parties involved in the project, for example printers, specialists or online social networks. The process was also applied to identifying the resources involved in the distinct types of activity that design companies are engaged in: design, pitching for work, consultation, event production and innovation. Interviews lasted 60 to 90 minutes.

In total, 48 images were completed and analysed. The majority of the images were made with SME and micro companies, with only three made with large companies.

Findings / How do Designers and Design Businesses Work?

INTERPRETING THE IMAGE

Front and back offices

The Enterprise Image is divided into three sections. The white central area – the **front office** – represents resources visible to both designer and client.

The blue areas above and below the front office represent respectively the client's and the provider's **back offices**, which are invisible to the other party.

Front-office resources

Partnered Direct: Resources visible to both client and provider and usually managed by the provider. Examples: a television programme, an app or website.

Collaborative Direct: Resources are visible to both client and provider and managed by a collaborative team. Examples: a pitch to design a building delivered a collaborative team of architects and engineers.

Non-partnered Outcome Focussed: Employees of, or resources owned by either the provider or the client.

Customer Voice: Representing the customer. Examples: lobby groups, societies or residents' associations.

Third-party Direct: Third-party contractors may be coordinated by or be responsible to the provider or the client. Examples: Printers, freelancers, specialist.

Third-party Indirect: Usually independently managed and not directly engaged in contracts but with a direct influence on outcomes. Examples: social media, a gallery, an individual who acts to connect a designer to a client.

Back-office resources

Internal Support: Employees who have no direct contact with the client. Examples: accounting and IT support.

Third Party: Resources contracted solely by the client or provider. Examples: art worker, material suppliers, accountant.

Governance: Those who determine the resources available to a company and dictate their co-ordination. Examples: board of directors, holding company, local council or government department. Although not necessarily aware of the detail of the operations, as decision makers they assert a great impact upon the outcome.

>>

Enterprise Image:
Key

Enterprise Images by company size:
Sole Traders/ Freelancers: 12
Small/Medium Enterprises (2-250 employees): 29
Large Companies (2500 employees): 7

A SOLE TRADER

The client, a Japanese gallery, became aware of the potter's work through the Crafts Council shop at the Victoria and Albert Museum, London. (V&A) The pots were designed and produced by the potter in his Somerset studio using raw materials sourced from local and national suppliers and then transported to Japan via courier. The network is both nationally and internationally based and the importance of formal third parties indirect is very clear. The transaction is reliant on two national institutions (Crafts Council and V&A) for representation of the potter's work and as a link between the potter and the client.

> *That Crafts Council shop in the V&A. It was such a shame that they got rid of that. A lot of people still say, 'I saw your work at the V&A'. That's where the gallery first saw it. I still get people saying that... it shows the importance of an institution like that.*
> ***- Potter, Near Bath***

Freelance designers and sole traders

Enterprise Images created with freelancers included: a potter making work for an international exhibition; a graphic designer designing a set of postcards for a national artist; and a screen-printer producing a poster for a regional design company. Over half of freelancers' clients were based in the region, the rest were evenly distributed nationally and internationally.

In the same way that the Crafts Council shop at the Victoria and Albert Museum, London was an important resource for the potter, we revealed the importance to a freelance illustrator of an informal social space, a pub, in the centre of Bristol. She made contact with her client through exhibiting her work there. In both examples, the third party indirect resource - the museum shop and the pub - played a crucial role in giving visibility of the designer to the client; this led to a connection between them. In these cases the value of the third party indirect to the economy is greater than the profitability of the shop or pub alone.

In the region, we found, freelancers and sole traders function in three main ways: They manufacture objects for consumers, and they provide specialist and support services to regional design and non-design related businesses. They are at times vital to medium and large companies in the region. Although small in size, freelancers can nevertheless be large in significance; their value is greater than might be suggested by their turnover and profitability. Those with an international standing also boost the reputation of the region.

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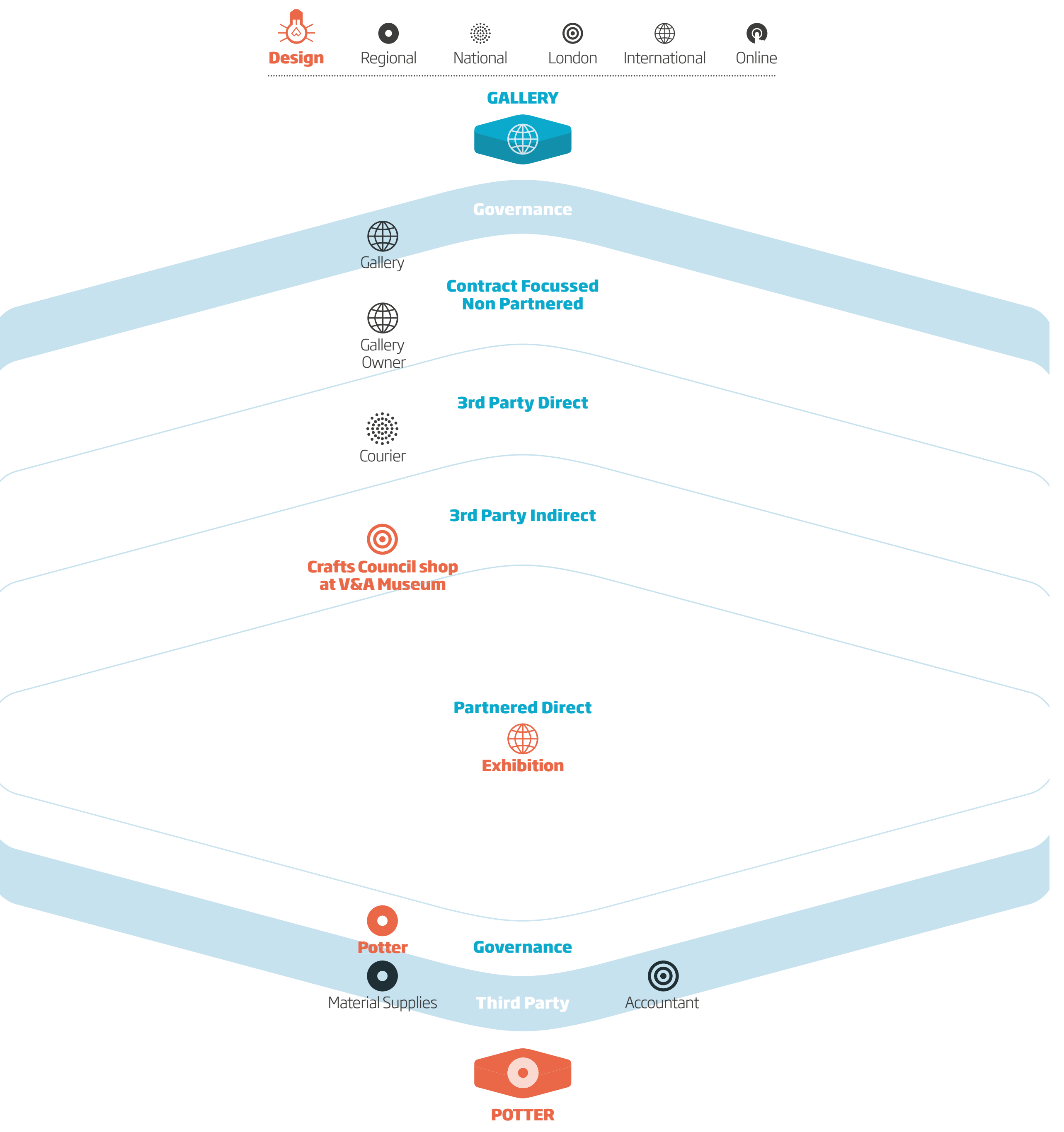
Enterprise Image:
Regional Potter Making Work for Exhibition in Japan



Findings / How do Designers and Design Businesses Work?

SMALL AND MEDIUM SIZED ENTERPRISES

This complex project involved five non-partnered contract focussed employees from the design agency with additional internal support from designers and administrators. A third party regional animator and printer were coordinated by the non-regional client but selected on recommendation of the creative agency. The role of the designer was therefore broader than their design skills, as it involved the trust that the client had in them to provide guidance and access to the designer's regional network.

> *They trust us to say, 'actually, these are really good printers'. Or 'these are really good X, Y and Z', and they go, 'oh, all right, cool'. Because they don't necessarily have the experience of dealing with printers so they would take our point of view on the guys in Bristol*
> ***- Senior Graphic Designer, Bristol***

Small and Medium Sized design companies

Enterprise Images mapped included: a production company making a film; a design agency creating a new brand design; and a product design company designing and manufacturing giftware.

Small and Medium-sized design companies in the region are involved in the design of a broad range of complex services and products. Their clients are mainly nationally based SMEs and large companies.

SMEs have internal support resources (employees) in administrative and management roles. In all cases designers are placed in a central role, communicating directly with the client to understand their needs and co-ordinating third parties. The role of the designer is broad, involving communication, co-ordination, developing trust and offering access to the skilled regional network.

SMEs also make use of a regionally based pool of freelancers. Freelancers can be: those who have specialised skills and those who can take on basic tasks when a company has a heavy workload. Regular use of freelancers allows design companies to expand and contract on a project-by-project basis, gathering a team of appropriately skilled workers as needed. The use of freelance support is essential to operations, particularly for TV, film, animation companies, events companies and design agencies.

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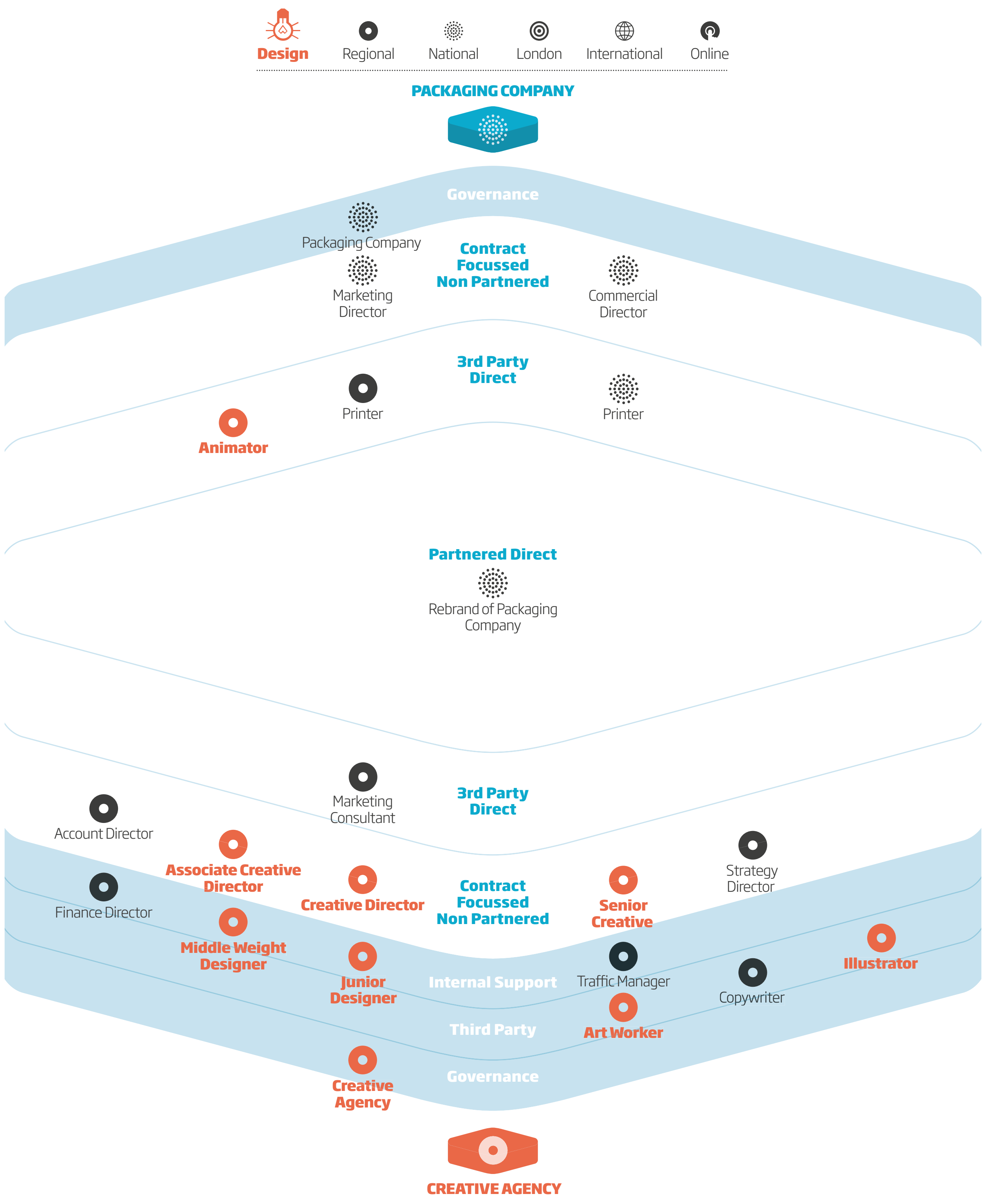
Enterprise Image:
Packaging Company Re-Branded by Creative Agency



LARGE COMPANIES

This large production company in this Enterprise Image differs from the small and medium-sized companies as it is governed by a larger media group, to which it is accountable. Unlike other enterprises, front office communication is only between provider and client, thus suggesting a high level of trust in the production company's selection and coordination of third party services. It has internal support management, financial and administration roles, and relies heavily on regional third-party back office support services to produce and deliver the finished product. While design is considered important to the success of the enterprise, the two design roles conduct their work in the back office and as such are not visible and have no contact with the client. Despite this lack of prominence, the non-designer interviewee from the firm stated that design was essential to the success of the project.

> *[Design is] extremely important. Because it's about the look. And, after all, we're doing a visual medium…And it's extremely important that the creativity is at the right level and they instinctively know how not to bedazzle your eyes and what the look is. And that all comes from talking – what's the project, what are you trying to portray. Come away with a few illustrations and visuals and, if everyone likes it then it's fantastic, we're doing it, you know, we're just doing it.*
> ***– Producer, TV/Film Bristol***

Large Companies

Enterprise Images involving large companies in the region include: a ship design company designing a ship for an international government; a production company making television programmes for an international broadcaster; and a conservation organisation using its in-house team to design a visitor attraction.

Large design companies in the region are involved in the design of complex, large-scale products or services for sizeable national and international client companies. Large companies are often governed by a national or international group, to whom they are accountable. They have high levels of employment and provide work for regional, specialised design-related third parties. They attract international and national money into the region.

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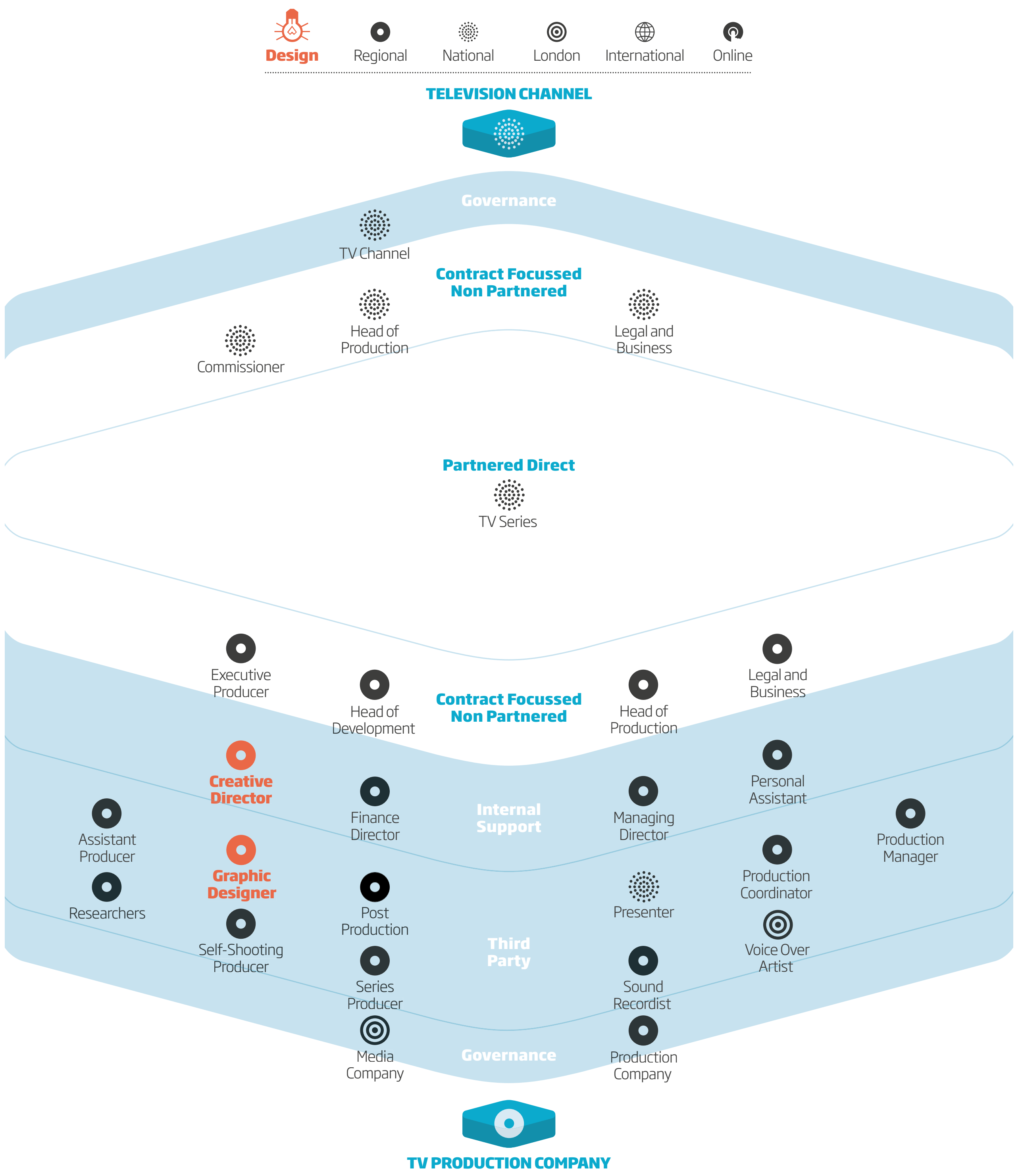
Enterprise Image:
Production of Series for National TV Channel



Findings / How do Designers and Design Businesses Work?

MAKING A PITCH

The image shows the collaboration of a regional architect with a regional landscape architect and a regional engineering company to pitch for the design of an international cultural centre. In this enterprise all design activity is undertaken in the region. Senior designers have contact with the client and draw together a team of in-house and third party back office specialist support services to deliver the pitch. Specialist services, consisting of communications and a historian, are sourced where appropriate, which in this case was in London.

> *So we say, 'OK, who are we going to work with on this project?... we really want to have fun with this and be very creative'. So we go to the top creative landscape designer in the country, who lives [nearby]...and then we also we need someone who has got a lot of experience in the Middle East, and an engineer and so we go to [local engineering company] for the service and structure of the building...so there we've got the basis of a team because, in order to do a design of a building, you need architecture, service and engineering, structural engineering and landscape.*
> ***- Architect, Bath***

Making a pitch

Many designers in the region are pitching for new business in collaboration with other design-related companies. Examples included an architectural practice pitching for an international visitor centre and an engineering consultancy pitching for a national visitor attraction. These were large complex projects which demanded collaboration with third parties of equal reputation from different disciplines. Opportunities to pitch are advertised by indirect third parties, such as industry publications and websites.

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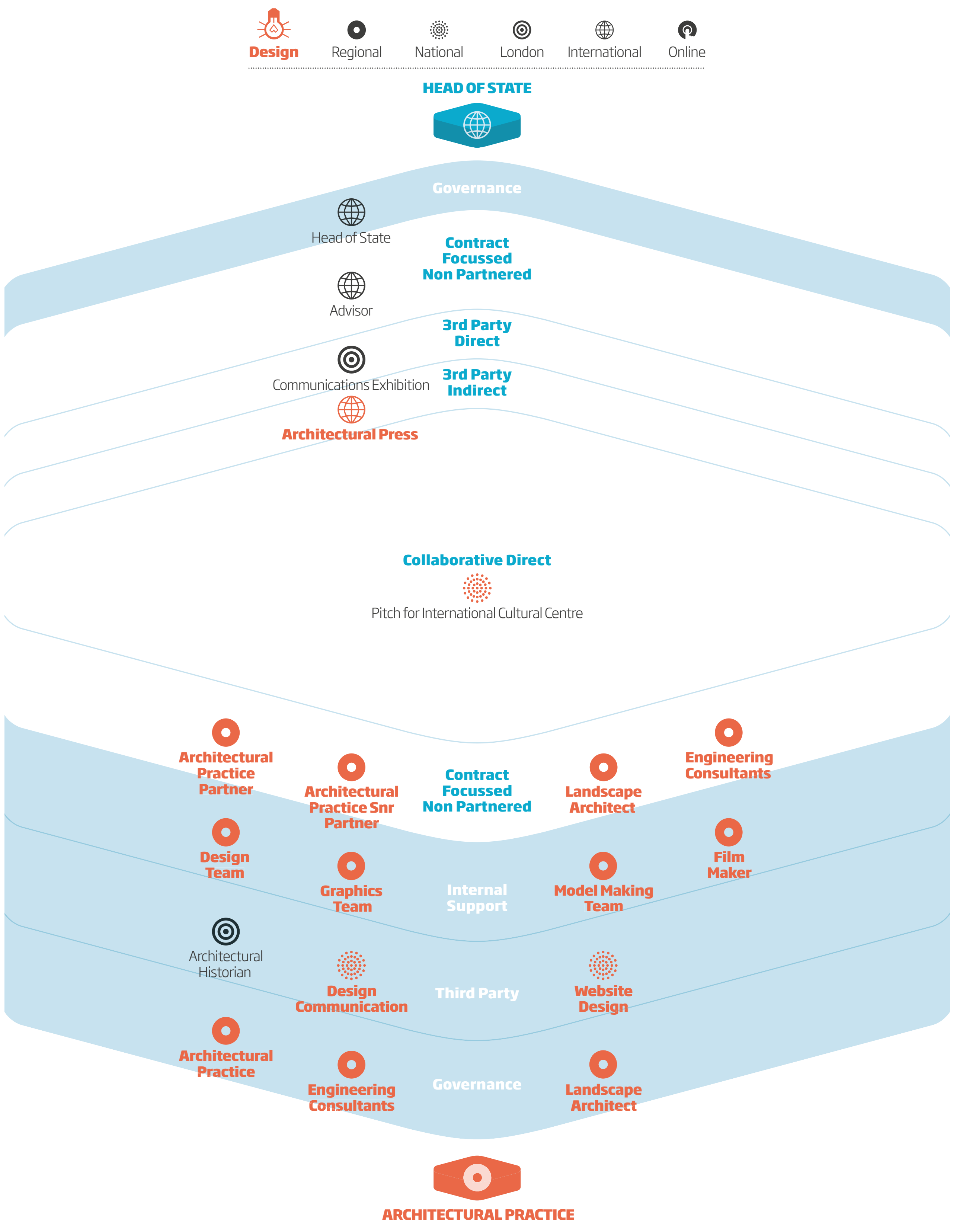
Enterprise Image:
Collaborative Pitch for Design of International Cultural Centre



CONSULTANCY

This images was made from the point of view of the partnership manager, an advisor connecting regional apprentices with the regional design company for whom she works. The industry skills body in this case were setting up and coordinating design-related apprenticeships for young people in the region. The apprenticeships were advertised through online indirect third parties and provided with additional training from a non-regional college. The advisor has back office internal support for IT and website maintenance.

> *We noticed that they were advertising these jobs all the time. We contacted to say, 'We notice that you've got this skills shortage, can we come and talk to you a bit more about it? Where are you looking? What are the challenges? Why are you recruiting locally?' We then at that time, had also developed an apprenticeship around interactive design and development… They're a very respected organization in the city, they have vacancies, they didn't seem to be filling them, we entered into a dialogue.*

Consultancy

Consultants interviewed were in non-design companies working to connect designers to clients and employees. Examples include a regional advisor connecting a high-tech company with design companies and an advisor connecting regional apprentices with a regional design company. The consultancies were funded by national government and international (ERDF) funds.

In both examples consultants play an important role connecting designers with clients and employees they may never have otherwise made contact with, increasing the size and diversity of the network.

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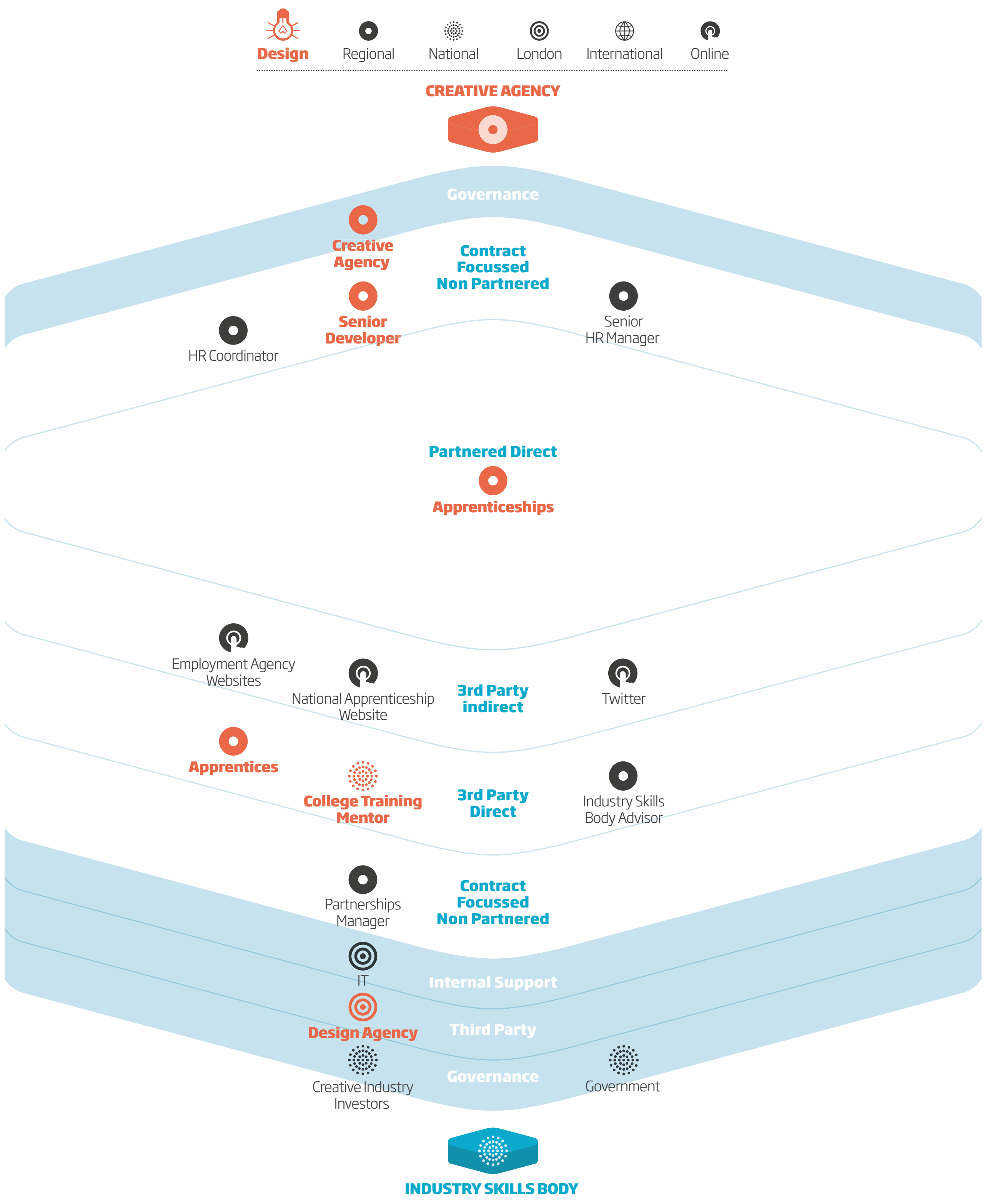
Enterprise Image:
Co-ordination of Regional Design Apprenticeships



Findings / How do Designers and Design Businesses Work?

EVENTS

The event production company has internal support roles for administration, operations management and construction. All back office third party design services are regionally based. A large number of third parties are co-ordinated by the company in the back office for construction and design, and in the front office for performance, production and catering. It is a complex operation.

If we want to do something, we know all of the people we would need and we can put them into action really quickly and we can do some really great things. I don't think we could find that anywhere else in the country or in Europe actually. It's really special.
– Event production designer, Bristol

Events

Event production companies in the region are involved in the production of staged events for regional, national and international festivals. These companies have few internal employees but offer a high level of employment to regional freelance designers and national and international performers. Directors of the companies felt that the region was unique in that it contained the all the necessary people and skills to deliver events at an international level.

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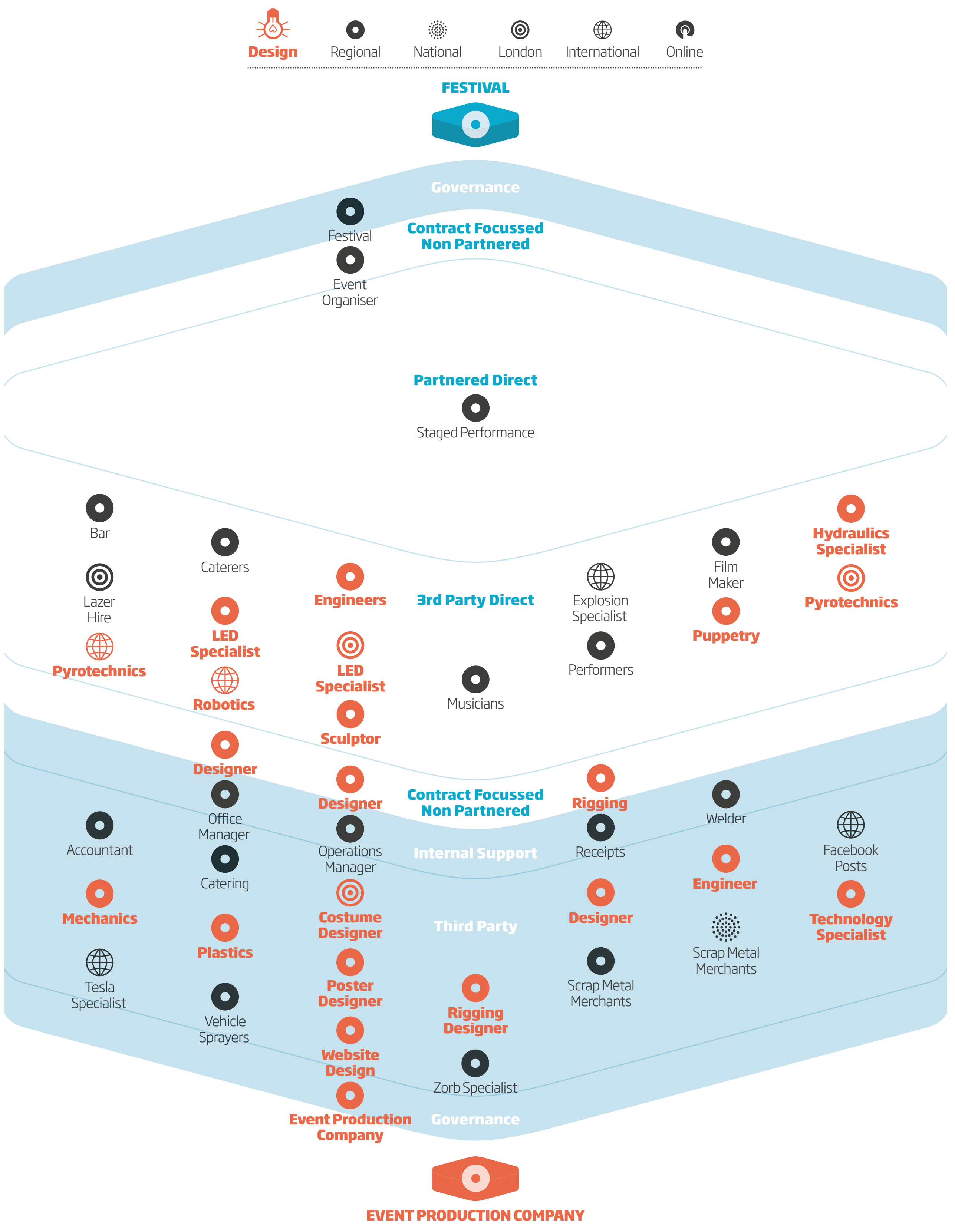
Enterprise Image:
Design and Production of Regional Festival's Staged Event



INNOVATION

The image shows plans for the design and production of a new, locally sourced cloth by a small textile organisation. The back office has a volunteer providing internal support and a third party website designer based outside the region. In the front office the founding director and the special events manager (Contract Focussed Non-Partnered) coordinate third-party regional designers and suppliers. The most significant resource is the third-party indirect: universities, museums, social media and networking forum, who provide opportunities for the sharing of knowledge, funding and publicity.

> *If you want to make new things, entrepreneurial things, then you do have that support. You wouldn't get it in London, so if anyone's starting up a business or wants to try to do something a bit new, I'd suggest they left London and then went to Bristol.*

Innovation

Examples of innovation in the Enterprise Images include the development of new products and services by freelancers and SMEs; included the establishment of a research and development department in a non-design related company; textile design and production; the design and production of an accessory for a high-tech product and the design of an app.

Innovation at this scale utilised a significant number of indirect third parties including universities, co-working studios, training providers, trade events, guilds, networking forums, creative industry support organisations, the Arts Council, and other design-related companies, all of whom contributed support in the form of funding, mentorship, opportunities for knowledge exchange and publicity. Innovation does not happen in isolation, but requires the support of multiple resources.

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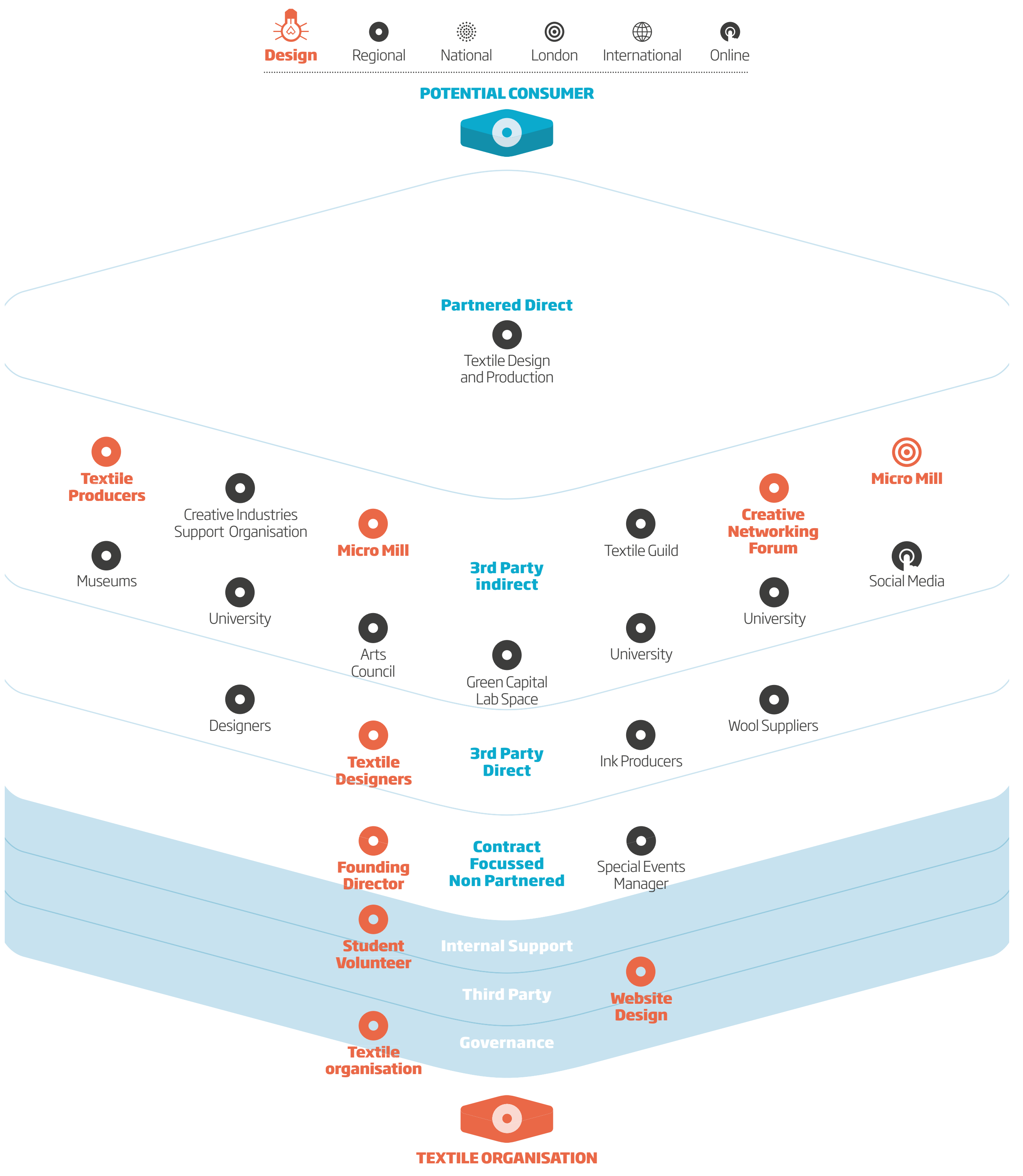
Enterprise Image:
Plans for Design and Production of New, Locally Sourced Cloth



CONCLUSIONS

Enterprise Imaging shows that designers and design companies are not creating goods and services in isolation, but are working in relationship with a number of regional and non-regional companies and individuals to create value.

Regional design companies work mostly business to business, providing services to a broad range of industries including international government departments, broadcasters, retailers, universities, county councils, high-tech companies, and other creative businesses. Design in the region is not dependent on one geographical market location or on one single industry, but thrives instead on the diversity of markets it is able to access.

Having the freelance team means that we can employ more people, we can build up the skills base better, we've got more flexibility to do different things and offer different solutions for people - gives us that kind of production muscle. Which is unusual. And I would say we're probably one of, maybe, four or five studios in the country that can do that.
– Animator, Bristol

All design companies place the designer in direct contact with the client. It is the designer's role to understand the client's needs, and to communicate these to all the other design-related parties involved in the enterprise. The ability of design companies to manage relationships with clients, Third Parties and Indirect Third Parties is an essential factor in determining the performance of design companies.

All three sizes of design companies in the region have interdependent relationships. Freelancers and micro companies provide design support to each other and to larger design companies.

Third party resources not directly involved in a project, but who play a crucial role as connectors, enabling designers, collaborators and clients to be visible to one another, are centrally important to design. They may be formal, professional organisations, online networks or informal networking places such as exhibition spaces, retail outlets, co-working hubs and social spaces. They can also facilitate the sharing of ideas and expertise as well as offering facilities such as workspace or equipment.

Innovation in micro companies requires a high level of third party support for funding, provision of workspace, mentorship, opportunities to share ideas and experiences and an environment where failure is permissible.

The Enterprise Images show that in many cases design-led companies are project-based organisations. Although they focus on one core specialism, they have a network of third parties they can draw upon according to the client's needs. Many interviewees, across all sectors, cited the regional network of flexible, highly-skilled companies and individuals that can be relied upon to deliver a project, as well as a strong community of people that are open to ideas and ventures, as key reasons for success and for remaining in the region. This connectivity is significant to regional design-led companies' increased level of productivity.

CASE STUDY: THE DESIGN PROGRAMME

Between 2006-2016, The Design Programme (TDP) helped small businesses to increase value through interactions with professional designers. TDP provided one-to-one mentoring of businesses to prioritise their goals and co-write a design brief. The brief was sent to at least three design suppliers. Mentoring continued throughout the design project, with the small business taking the lead in choosing the final supplier and managing the design project.

Further support included advice on websites and communications; redesigning or creating brands; developing products or services; developing packaging solutions; identifying trends and customer needs; and introducing sustainable practices into the design and marketing process.

The businesses found that design gave them measurable results such as bigger market share, increased profitability, increased profile, effective communications, production savings, increased customer loyalty, targeted product development and, sometimes, complete business transformation.

Independent evaluation of its most recent large scale project, Less=More[4], showed that TDP helped its client businesses increase their Gross Value Added by £19.6 million; created 53 jobs; and created a return of £8.91 on public investment for every £1 spent. This project worked with 110 businesses in the South West region (excluding Cornwall) over a period of 3.5 years.

The most common benefit was in generating new markets and sales. More than a third of businesses reported that growth was as a result of improvements to branding and communications, and access to new networks.

The Design Programme approach also led to an additional £562,000 spend on design, or an average increase of 67% by each business, in the South West region. This finding also shows the benefit of TDP to the design industry in the South West, creating significant value and additional work for designers.

Businesses felt that good design was the catalyst that propelled a business forward, or fast tracked a product to market.

[4] The Art of Balance (2015) Evaluation of The Design Programme, Design and Innovation for Business Sustainability 2.

We specialize in the discipline of landscape architecture but we collaborate with a wide range of disciplines from structural engineering, civil engineering, architecture, graphic design. We have the landscape design and graphic skills in our team but we’re often working as part of a multidisciplinary team to deliver projects to clients.

– Landscape Architect, Bath

What is Important to Designers and Design Businesses?

Over the course of the project our understanding of what designers thought was important to them and to the success of design in business grew and developed.

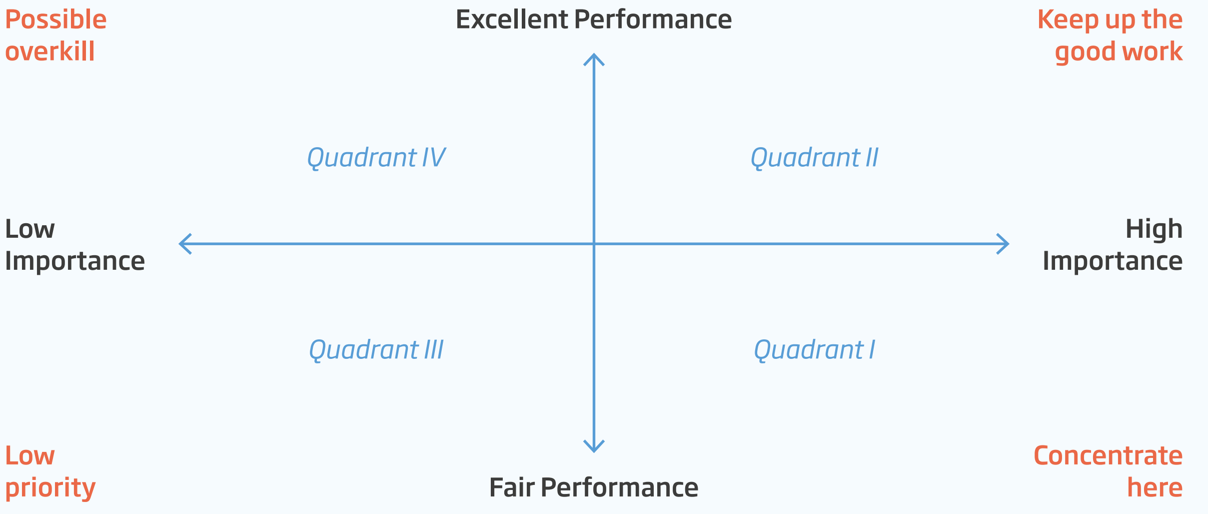
Previous sections of this report provide information about the designers and the design businesses in the region. Here we identify from the data aspects of living and working in the region that are important to designers and design businesses.

IMPORTANCE-PERFORMANCE ANALYSIS (IPA)

IPA is an evaluation tool that enables a graphic representation of the relationship between importance and performance in a given area of activity. For example an aspect of the design sector, such as high speed internet, may be of high importance to the designer, but may not be of performing well in the region.

Using IPA to analyse the survey data enabled us to look at the performance of a number of attributes in relation to how important they are for the designer and design industries working in the region.

Table 1 - Interpreting IPA



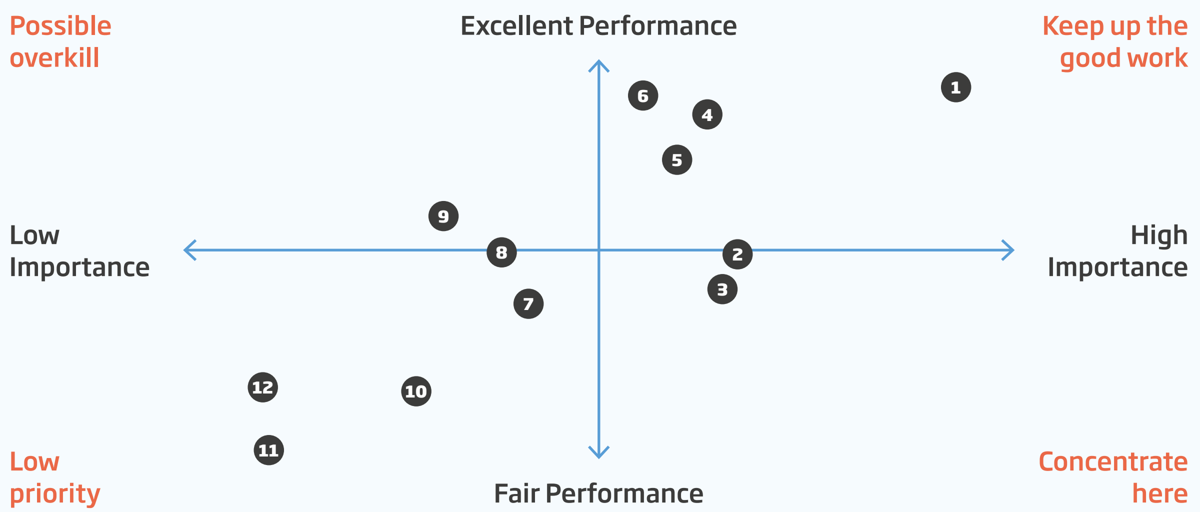
Quadrants	Implications
Quadrant I **Concentrate here**	Attributes are perceived to be very important to respondents, but performance levels are fairly low. This suggests that improvement efforts in the region should be concentrated here.
Quadrant II **Keep up the good work**	Attributes are perceived to be very important to respondents, and at the same time, there are good levels of performance in these areas. The message here to the region is to keep up the good work.
Quadrant III **Low priority**	Attributes here are rated as having low importance and low performance. Low performance should not be a cause for concern, since the attributes in this cell are not perceived to be very important. Limited efforts and resources should be expended on this low priority cell.
Quadrant IV **Possible overkill**	This cell contains attributes of low importance, but where performance levels are perceived as relatively good. Respondents are satisfied with the level of performance, but it is possible that additional effort and resources focussed on these attributes would be superfluous/unnecessary.

From the range of analyses undertaken using IPA we have chosen four to illustrate the ideas and perceptions of the designers who took part in the survey.

In each case the coded attributes are listed and plotted on the grid to show the respondents views of their importance to them and the current level of their performance in the region.

Findings / What is Important to Designers and Design Businesses

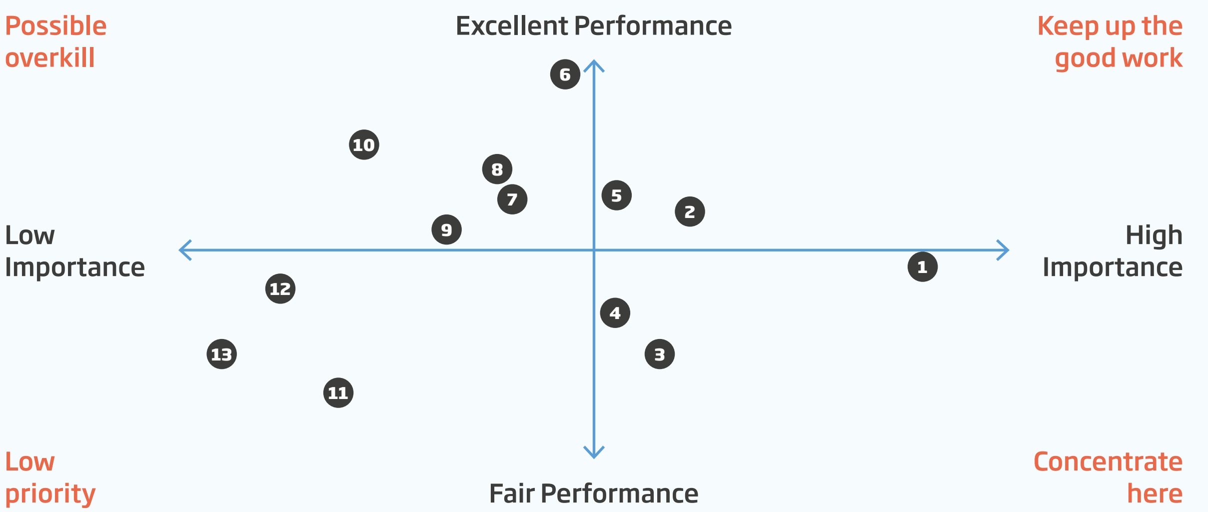
What is important to you as a designer?



Attribute Number

1. Working with skilled and supportive colleagues
2. Creating new relationships with other professionals
3. Openness to new ventures
4. Access to arts and cultural activities
5. Places that are open and friendly
6. Support from family and friends
7. Making useful contacts through informal social activities
8. Having locally based friends for accessing business opportunities
9. Acquaintances
10. Involvement with professional organisations
11. Making new business contacts through formal events
12. Memberships to associations and institutions

Of the twelve coded attributes respondents said that working with skilled and knowledgeable colleagues was extremely important and the region was performing well in providing a skilled workforce to match this. Also important were access to arts and cultural activities, open and friendly places and support from family and friends, all of which were being met in the region. Areas of importance to the designers which needed to be improved and strengthened were in provision of opportunities for new ventures and facilitating making new relationships with other professionals. Making contacts through formal events, involvement with professional organisations and membership of associations and institutions were not seen as performing particularly effectively but were seen as relatively low in importance.



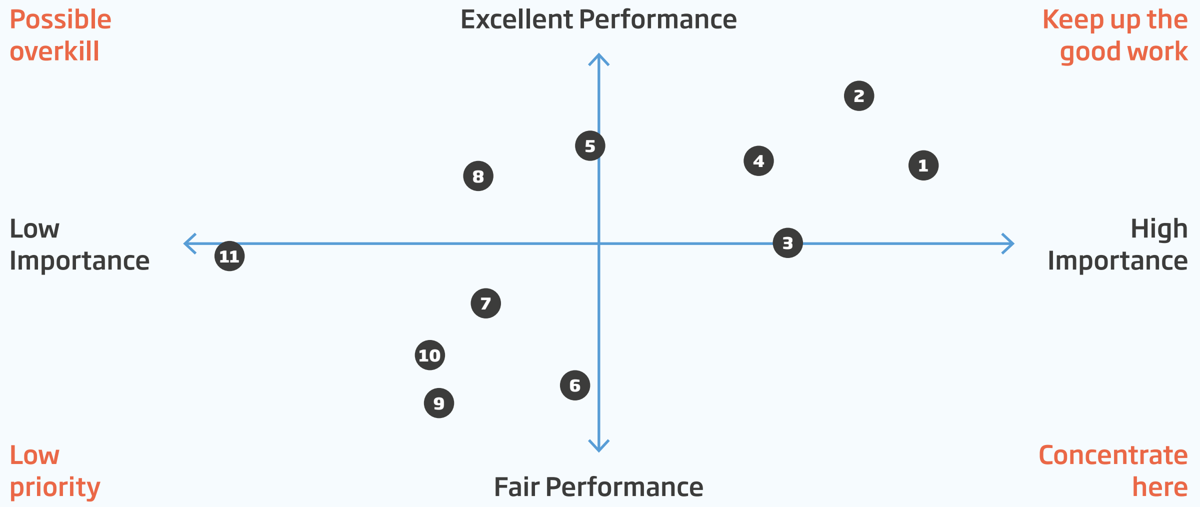
Attribute Number

1. Quality of life
2. Design-related communities
3. Art and cultural facilities
4. Inter-city transportation
5. Tourism / leisure
6. Social networks
7. City identity
8. Public funding and services for business support
9. Private funding and services for business support
10. Job opportunities
11. Close to friends / family
12. Working spaces: offices / studio
13. Entrepreneur networks / support

Quality of life is the most important factor for these designers, yet their view is that region does not perform above average on this attribute. The region should focus efforts on identifying issues to enhance designers' perception of this aspect in order to retain them in the area. From the social point of view, respondents felt that tourism and leisure and design-related communities were important and they were reasonably well provided in the region. Important and not performing particularly well, so needing attention, are inter-city transportation and arts and cultural facilities. Social networks are seen to perform very well in the region but are only of average importance.

Findings / What is Important to Designers and Design Businesses

How good are these aspects of our region?

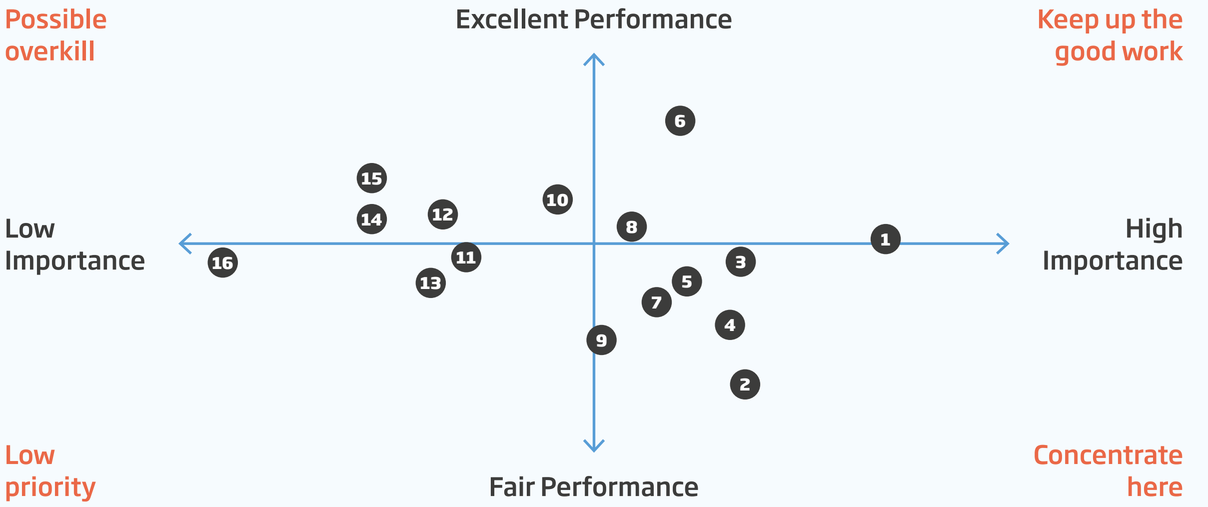


Attribute Number

1. Creating new connections through informal social activities
2. Connections with local firms
3. Availability of skilled workforce
4. Reliable social media platforms
5. Having previously existing friends or family locally
6. Easy to find business supporting services
7. Extend connects through formal social activities
8. Build up new business relationships through co-working spaces
9. Memberships of associations and institutions
10. Involvement with professional organisations
11. Close to the similar companies

Respondents said that creating new connections through informal social activities, connections with local firms, and reliable social media platforms were all important to them and they felt these were being delivered in the region. Providing a skilled workforce was also important to them and the region's performance in this respect was no more than average. The region des perform well on building up new business relationships through co-working spaces but this relatively unimportant to the respondents.

What is important to your business?



Attribute Number

1. Quality of life
2. Local clients and market
3. Design related communities
4. Art and cultural facilities / events
5. Working spaces: offices / studio
6. Social networks
7. City / region identity
8. Location proximity to supporting services / industries
9. Inter-city transportation
10. Entrepreneur networks
11. Tourism / leisure
12. Recruitment opportunity
13. Public funding and services for business support
14. Located close to similar firms
15. Private funding and services for business support
16. Other

The pattern here suggests that the region is performing well on things that are less important to the respondents and their businesses but relatively poorly on things that are more important to them. Respondents considered that local clients and market, design-related communities, arts and cultural facilities and events, working spaces and the city and regional identity were all important to their businesses but were not performing well in the region. The region is doing reasonably well in meeting needs for being located near to supporting services and industries, and providing social networks which are seen as quite important. However the provision in the region of entrepreneur networks, recruitment opportunities, private funding/services for business support, and locations close to similar firms, which was seen as above average, was considered relatively unimportant.

CONCLUSIONS

As we noted in the section on research methods, the respondents to the online survey represent a specific aspect of design in the region: a majority are working in micro businesses and are relatively well-established in the region. Some of the outcomes of the IPA analyses appear to reflect this particular perspective. However many of the perceptions and views that emerged from the analyses echo what we also found from other sources.

For designers, especially those working freelance or in very small businesses, the personal and the professional are often closely intertwined. Quality of life, in both spheres, is very important, as is the availability of support from family and friends. Interview data suggest that this support may be emotional, practical or financial and can be a determinant in whether the design work happens.

Working with skilled and knowledgeable colleagues is important to designers and this does not seem to be an issue, given that 83% of those responding were satisfied or very satisfied with their work situation. In relation to opportunities for new ventures and making new relationships with other professionals, also important, the region is not performing well. Informal, personal networks are working well but little exists to support expanding and moving beyond these. Formal events, membership of professional groups or organisations is not as important to these designers as more informal gatherings and networks. Effort and resource spent developing more formal ways of association and communication could be wasted.

Important to their businesses were different aspects of the context and environment: a strong city and regional identity, local clients and market, design-related communities, availability of working spaces, good transport links. These were not performing well in the region. Similarly the provision of arts and cultural facilities and events is satisfactory at a personal level but in relation to professional or business interests these were seen as performing less well.

Interestingly, private and public funding for business support are only slightly important to respondents. This may be because they are seen as irrelevant or unachievable. Two thirds of respondents said they would like more information about sources of funding.

It's the 'Aha' of seeing, when you had all these analytic types, all these researchers, scientists, technicians, technologists... endlessly trying to sort of nail the model or the proof of it; and then you bring in a designer, a product designer, or an anthropologist. You saw a whole different chemistry, which could be quite combustible, because they came from such a different angle. But where it worked, where you got those two [sorts of] people to work, it really sang.

– Hi-Tech Consultant, Bristol

What Could be Done to Enhance the Design Industry in the Region?

This question was asked of survey, interview and focus group participants.

Many designers felt there were good things already happening, and the region was doing well. However they were alert to the region's capacity for development and were full of ideas for how this might be achieved, of what was important, and how they and others might contribute. Their areas for focus related to areas identified in the IPA analysis, as important but needing development.

OPEN UP AND STRENGTHEN THE NETWORK
The most frequently suggested action was to:

+ open up and strengthen the network,

Given the evidence from our sample of designers that they recognised the ready availability of all kinds of networked assets to the design communities in the region, it may seem strange that they are suggesting this as a route to enhancement. Indeed, some respondents to this question were very satisfied with the status quo. However, others pinpointed ways in which the sector could make its networks stronger and more open. Some younger, newer arrivals on the scene thought the networks were difficult to access and appeared to be finding it harder to break into well-established, successful social and professional groupings. There were also senior designers who described feeling isolated and who felt they and others would benefit from contact outside their immediate environment.

> *There are a great deal of senior designer/creative director level business owners that work on their own and could probably benefit from working in a wider creative environment. We all need a little creative inspiration and sounding boards, etc. Why not an ongoing set up… a general approach that is agreed on by those involved, but could also spring projects that are linked with [a university]… putting on talks and workshops.*

The data on diversity within the sector perhaps also argues for it being opened up.

It was felt that while the informal networks in the region were good, the design network could be improved with the provision of more opportunities to meet, greater visibility and easier points of access for those without a pre-established connection. Several respondents suggested an online database for:

> *better access to pool of designers / more centralised contacts or specific online community*

The central importance of networking to the success of design enterprise is clear in the research: it is the key to finding work, finding clients, getting jobs done, collaboration, communication, learning and sharing. One rurally based freelancer commented:

> *It's not really money I need, it's connections, that's what you need. I suppose it's connections to people who I can work for, in the long run, rather than funding bodies.*

A STRONGER IDENTITY FOR THE CITIES AND MORE COLLABORATION
The process of opening up and strengthening the design network was associated by the designers with suggestions for a range of different activities. Many of these were linked two other areas identified for development:

+ a stronger identity for the cities and the region as a location of design excellence;
+ greater collaboration and communication within and between different companies and agencies involved in design (including education), in and outside the region.

In both Bristol and Bath there was felt to be a need for greater visibility of the design activity in a region where some companies operate internationally but have little contact with other local design companies.

> *You see it as a disappointment now when you see a great business but they're just not connected locally. You think, 'They could do better, but also the ecosystem could do better if they were more connected'.*

One Bath-based respondent thought the council could take a stronger role in showcasing design in the city:

> *underneath the skin of all the little companies at the end of little cul-de-sacs or behind Georgian facades; it is amazing what's going on here.*

There were very many suggestions for more events. For some this took the form of a design festival that would act as a beacon for design, attracting new companies and individuals to the region:

> *an annual or triennial big event about design industry and arts held in the region like a design week or the biennale of St Etienne (France). It would involve and bring together professional designers (from inside and outside the region) and students. With workshops, conferences, awards maybe?*

> *I think that having a festival of design of some kind where…. I think you'd have to pull some really big names from all over the world, from New York. I don't know how easy that is, I don't know how possible that is, how expensive it is, but I think anything to put Bristol on the map.*

Other types of events showcasing design in the region were suggested:

> *Regional design events / open days / opportunities to meet and find out more about who is doing what locally.*

But also events that are practical, cross-disciplinary and would provide designers with support and creative stimulation. It would:

> *help to create design communities across and within disciplines, where business relationships can be explored, problems can be solved and help and people found.*

Opening up the design sector to the wider community was seen as potentially mutually beneficial.

> *…more of a forum to talk about things like processes, and how times - you know, how things are changing, technology's changing. About ties with universities, or what we could do locally. My gut feeling is that a lot of what ends up actually happening with things like [names networking group] is, it starts to feel more like networking than actual real, intrinsic value to design practitioners, or the wider community, like universities, colleges, schools even, you know…I'm sure there's like room somewhere in the middle for something that is more practical, for designers in the area to learn, to get inspired, and to also give a little back, whether it be community, whether it be schools, universities, you know.*

Opportunities like this for interdisciplinary collaboration in conjunction with the region's universities and schools were repeatedly called for and considered essential for innovation. There was disappointment that plans for the Dyson School of Design innovation in Bath were abandoned although there was a willingness among designers to be involved in such a project.

> *If you work too much in a silo, it's very hard to have new ideas, you just keep regurgitating the same one, so as much influence that you can have from the outside as possible, so you get that obviously from music, from television, from galleries, from meeting people. But also I think, you get it from other design disciplines.*

The benefits of interdisciplinary collaboration where articulated by one high-tech designer:

> *It's the 'Aha' of seeing, when you had all these analytic types, all these researchers, scientists, technicians, technologists…endlessly trying to sort of nail the model or the proof of it; and then you bring in a designer, a product designer, or an anthropologist. You saw a whole different chemistry, which could be quite combustible, because they came from such a different angle. But where it worked, where you got those two [sorts of] people to work, it really sang.*

DEDICATED FLEXIBLE HUBS.

Craneworks, Bath, a proposed interdisciplinary space for arts, science and technology has been envisioned by a team comprising figures from the city's leading design companies, universities, entrepreneurs and other not-for-profit organisation. The space would offer office and studio space, making spaces, education and exhibition and conference spaces as well as skills training and a cinema. The ambition is to create a hub for SMEs in the creative, digital and tech sectors and to make strong links with the local community, providing 'an exciting, inspirational and inclusive environment for the development of hybrid creative, technological and practical making skills in people of all ages'.

Plans to locate Craneworks in a former industrial building on the South Quays have now fallen through but efforts are continuing to find a way to make such a space happen. Throughout our study, Craneworks has been repeatedly cited as important for Bath as a means to sustain and grow the city's creative industry, providing three to four hundred affordable work spaces, a cultural centre for young people and a stimulating environment that could assist in retaining graduates and preventing companies from relocating to less expensive sites in Bristol and the surrounding rural area.

> *Craneworks, I would love that to happen, there is the potential for a fantastic creative hub in the middle of Bath. That would send out a very strong message to the region that this a really vibrant, exciting and creative place. I don't think there is enough of those sorts of hubs in Bath. More and more people are working on their own or in small teams and they want to get together with other people. That is how ideas happen, that is how creativity happens.*

Craneworks in Bath needs to happen. Sort out the BANES, Bath & North East Somerset, council who don't seem to prioritise creative business at all. Wiltshire has public art officers, Bath doesn't seem to have any interest, or if they do I haven't come across them. Bath needs make spaces, where anyone can go to use equipment and socialise, learn, mend things, make things.

AFFORDABLE AND APPROPRIATE STUDIO AND OFFICE SPACE

Another area for priority identified by designers from Bristol and Bath related to the provision of affordable space and space that was of appropriate size, shape and location. Some remarked on the need for more spaces that allow for interaction:

But office space is probably the one thing that holds us back. And, we, we've got this building but we're cramped, you know, so much of the space that people are in is converted Georgian buildings which aren't really relevant to the modern offices. They don't have the, the sort of, the working together. People like to work together in bigger spaces, I think. Um cabling, um facilities – loos, you know… it's not there in a damp-ridden Georgian townhouse in the middle of town.

In Bristol there was a call for more affordable studio space, as well as space that was suitable for meeting clients:

[names co-working space] is okay, cheap desk space, but it's like a cattle market. You couldn't take a client there.

We have directly had to move because of rent. It's like London; you just have to move further out to the outskirts of Bristol. There are spaces you can take over in Fishponds. But you don't want to have to do that, you want to be in the centre where everything happens.

SOURCES OF SUPPORT

When design SMEs are successful and grow quickly they face particular challenges but attract little support because they are successful.

There is a massive gap when no one supports you, I guess between Years 2 and 3 or in our case, between three and eight staff, where you're growing very quickly, you haven't had time to amass any cash flow or savings to invest in something, so you have to do everything on the fly and there isn't anyone who caters for that because you're seen as successful and you're not seen as a start up, and we are definitely in that trap.

One small textile company considered the receipt of rates relief had enabled their growth, whereas a well-established animation company found the regional support for the creative industries inadequate.

Well, the Council I think is woeful in its support of creative industries. I think they really are unfocused. They're, they're swayed by the kind of uh the bright lights. So, if it's like, you know, a digital online app, it's – that's fine, you know, that's – 'Hey! That's modern!' But then you think, well, OK, we're an existing business, we've got thirty years of trading history, we've done well, we've got a name for ourselves in the industry. What help do we, can we tap into? Our help comes from Creative Skillset in London, Media in Europe. We get nothing from the region. We get nothing from the Council.

Overall the South West is a hotbed for creativity of all sorts right now. It needs support and encouragement, tax breaks, especially for start-ups and SMEs - otherwise, as little political interference as possible. The people in the region have made it work, we must be careful not to let politicians and big business break it.

Access to business support, particularly in the form of mentorship was mentioned many times. A mixture of responses showed that some designers are unsure of what business support is available to them and how they might access it. Some feel the business support that is available has not been of high quality, and others, the majority, feel they are in need of mentorship from an experienced person from within the industry.

I think we need more business support, and whether that's kind of looking at having a mentor, which is quite likely to be someone that's got industry experience, that's come down to Bristol. When I say that, I mean they could have got that experience in Bristol, I shouldn't sort of say it in that way, but there are bigger agencies worldwide, and that experience is valuable.

INFRASTRUCTURE

Infrastructural issues, namely transport and broadband were expressed by many respondents. The road and rail transport infrastructure within the region, particularly between Bristol and Bath, was considered poor and a hindrance to face-to-face meetings.

We do need to be really well-connected, even though our customers are quite local. You know, if they, if they want to come from central Bristol, for example, then they need to be able to get here easily. If they want to come over from Wales or drive from London, then they need to be able to get here easily. Bristol has no transport infrastructure whatsoever.

The cost of train travel to London was an issue for the many companies with London clients who expressed frustration at the high cost of early morning travel.

> *Train fares to London extortionate especial for early morning trips... Bath/Bristol train fare expensive, traffic terrible.*

Frustration was also expressed at the difficulty and expense of connecting to high speed broadband.

> *What we're doing now is we don't deliver drawings in a physical sense, we're uploading and downloading information. So being on fast networks is something the city can do to help us.*

VALUE

A better understanding and appreciation of the value that design adds to goods and services in every sector and of its contribution to the region would, perhaps, lead to some of the requests from designers being addressed.

The design community is already co-creating its own infrastructural assets through its interactions. Promoting design as a field that creates value speaks convincingly to local authorities, universities, Local Economic Partnerships and other professional networking organisations.

Designers argue for support in creating a higher profile and developing access to markets and clients through annual festivals or showcasing events with the full panoply of prizes and awards. Setting up design hubs could start to support the needs for capacity building, mentoring, skill sharing and innovation that respondents articulated. Local authorities planning operations could do what they can to preserve the availability of low rent studio and start up spaces.

These suggestions argue that design has a lead role in a regional industrial strategy, engaged in acknowledging and understanding the value of creativity across all sectors. This project and its outcomes contribute to articulating this clearly.

DESIGNERS' SUGGESTIONS FOR ENHANCING DESIGN IN THE REGION:

+ open up and strengthen the network.
+ more low cost events, exhibitions and opportunities for networking.
+ dedicated open work hubs and flexible spaces for meeting.
+ an online directory of all the talent; opportunities for online networking.
+ a stronger identity for the cities and the region as a location of design excellence.
+ more support for micro businesses, expanding SMEs and creative start-ups; more work opportunities for new designers.
+ the provision of affordable and appropriate studio and office space.
+ targeted funding and more investment; better information about sources of funding and support and how to access them; government and local authority support around tax breaks, rate reductions and planning.
+ greater collaboration and communication within and between different companies and agencies involved in design (including education), in and outside the region.
+ more collaboration between design studios and freelancers.
+ better provision of education and training into and within the industry.
+ improved transport links.
+ access to high-speed internet.

The Bristol and Bath Design Ecosystem

The Bristol & Bath by Design project has responded to the challenge to understand and analyse the economic and cultural value of design in the Bristol and Bath region. Previous pages in this report have set out our findings from the different strands of the research.

We have described our attempts to use standard economic approaches to measuring value in terms of productivity and turnover. In contrast to this, the Enterprise Image analysis argues that design firms develop a very particular kind of value constellation in which value is co-produced with multiple resources and agents. This co-production is particularly reliant on regional networks for sourcing freelance and specialist skills and on very high levels of client negotiation skills. It is also bound into third party networks, which play a crucial role as connectors. We have seen the designers' perspective on value and heard what they had to say about different ways of being connected to place, ideas, employment, resources, people, and markets. There was, it seemed, something particular to the Bristol and Bath region where the range of connections produced strong and sustainable design identities, enterprises and networks. We have considered how businesses of all sizes and many types see and use design, and how freelancers fit into the system. We have looked at the region in the present in relation to its near and distant past.

The picture that emerges from this research is complex but an image that asserts itself clearly and strongly is of an overall web of connection that holds design in the region together and sustains it.

In this final section of our report we look more closely at this image and consider theoretical approaches to development formed through the overlapping models of networks and identify some of the key conditions that support a successful regional design ecosystem.

A cluster´s ecosystem comprises a different set of actors (companies, knowledge institutions, dealmakers, investors, etc) that influence the development of a given cluster. The closer collaboration and interaction between the actors in the ecosystem, the stronger the cluster and the more competitive the companies in the cluster. Strong clusters attract talents and capital and these strong cluster ecosystems can be found in mature clusters
(REG X Denmark, 2014) clusterecosystem.dk/portfolio-items/background/

We use the idea of the ecosystem to emphasise the idea that this is a complex living network sustained by many different kinds of value exchange. Inside the ecosystem people are giving and receiving all kinds of value: ideas, inspiration, contacts, technological know how, workers, access to markets, lifestyle support, knowledge. This complex network of exchange is what produces economic value for the sector and for the region.

Clusters and Ecosystems

The identification of clusters has become a key tool of industrial development policy. In the UK for instance, the recent McKinsey & Company (2014) report on cluster-based economic development creates a snapshot of the most economically significant clusters in the United Kingdom as of 2012. While London and the South East are home to nine of the country's most productive clusters, the UK's clusters are spread throughout the country, and encompass a wide variety of sectors.

The major clusters located in the South West were in tourism, aerospace, high-tech and ICT. The high-tech and ICT cluster was focused on Bristol and Bath. It contains a diverse combination of electronics manufacturers, animation and computer graphics firms, digital start-ups, and university spin-out. All three of the identified clusters in the South West are defined as being both fast growing and globally significant.

The definition of 'design' for our research into the Bristol and Bath region went beyond high-tech and ICT. One of the most significant aspects of Bristol & Bath by Design is the detailed ongoing mapping of design across industrial, business and cultural sectors as well as across the region geographically.

In relation to evaluating particular industries in particular regions, the literature of industrial clustering has moved from talking about clusters to thinking more about networks and relationships when considering the operation and function of a cluster. To build and support a cluster we need to understand the value constellations that sustain it.
A received idea is that industries tend to agglomerate in clusters, but recent studies have identified that dynamic interaction within a city play a more important role in sustaining an industry's cluster development. Storper (2013), for example, argues that the social and cultural contexts of a place play a key role in driving urban development and underpins economic activities. Studies of the creative industries, industrial development and regional innovation and creativity (Scott, 2000, 2002; Florida, 2000), point out that the emergence of clusters in particular cities and regions is in direct correlation to networks and social activities

(Becker, 1982; Wittel, 2001), educational institutions (Hall, 1998) and cultural spaces (Edensor et al., 2010; Rantisi and Leslie, 2006).

Creative 'clusters' then need to be considered as dynamic ecosystems that demonstrate how different actors function interdependently to develop and sustain a place's creative industries. The idea of the ecosystem has become a kind of shorthand to describe complex systems where are all the parts are interdependent, from the natural world but also all kinds of economic spaces, e.g. the innovation ecosystem, the technology ecosystem, the business ecosystem. It has also been applied to the creative and arts sectors (Markusen et al 2011)

Theoretical positions that characterise clusters as defined by systemic relationships, and as facilitated and sustained by social and cultural activities seem to us to be most appropriate to the design economy.

The proposition that the cluster is understood as an ecosystem allows us to do two things. One is to look at the whole system of exchange in the design economy in the region. Secondly it allows us to focus on the quality and value of the relationships that constitute the ecosystem at the actor to actor scale.

The Bristol and Bath region

The qualitative data collected by the project points to the 'close collaboration and interaction' that characterises strong clusters in the region.

Our evidence suggests strongly that for various reasons the design business in its core sectors is very social, creating identities, human capital and innovation capacity through a rich web of relationships. The regional ecosystem is active, vibrant with many types of exchange. We suggest that the qualities of value exchange in the relationships between designers, firms, clients, and their relationship to qualities of place are at the heart of the successful design network.

Our results also support findings elsewhere that density of networking opportunity, university impacts and a dynamic social and cultural context are all characteristic of creative economy clustering.

We did not find evidence of some of the potential problems for economic clusters identified in the McKinsey report: barriers to innovation and no availability of a skilled work force.

If we examine the relationships constituting this cluster, the strong evidence around collaboration argues that value is being co-produced by different operators in the network; they are co-dependent. The system is also dynamic. The birth of new companies, following the decline of others, as markets, technologies and business models change, is a marker of resilience within the regional design industry. The formation of new ideas and abandonment of ideas that cannot be bought to fruition is central to design itself, as one high-tech designer commented:

> *That's what design is about. If you go back to the roots of design, it's about experiment, and don't worry about failing.*

This approach to experimentation and innovation is reflected in a healthy start-up culture that is supported by the effect of beacon attractors. When one company leaves the area or changes its size or operation, new companies form in its wake. The decision to out-source design to the private sector first by the Ministry of Defence in the mid 1980s and then secondly by the BBC in the 1990s, led to a proliferation of small companies within engineering and TV/film sectors in the region, founded by former employees of each institution.

Similarly in the high-tech industries, the closure of a major design department at Hewlett Packard laboratories and the relocation of Inmoss, resulted in new start-up businesses by ex-employees of these companies who chose to stay in the region and seeded the current high-tech cluster for which the region has become known.

> *I suppose what happens in big companies is that people break away and form other companies… They'd learned their trade, found their clients, and they were starting to break away and form companies.*
> ***– TV/Film Designer, Bristol***

In animation a cluster effect emerged around Aardman, with related companies in the region continuing to thrive after Aardman's decision to take all design in-house.

> *They were getting work and they couldn't do it all. So they were hiring us to do it. So that was great. Plus the fact there were other people around meant, you know, so other editors might need something – it was just a kind of – that dynamic, I always mentally visualise it as Aardman creating these satellites, and then they have little satellites, and it's all this kind of spreading out thing. But of course, over the years, what happened was Aardman then got bigger and then took it all in-house. And so they stopped going out. But, by then, we were kind of a – we had our own momentum. So we had our own satellites.*
> ***– Studio Owner, Animation, Bristol***

Adaptation is also important. One aerospace engineer described how cyclical change in the way that large companies operate requires companies within the supply chain to be flexible:

> *The big companies are outsourcing more and more stuff, so there's lots of small little design firms, little engineering firms… It might have been engineers that worked in Airbus and then left, and then set up their own little studio, working on a specific aspect of the fuel system, or something like that, and then Airbus will, you know, outsource this to various people. But they go through phases. So sometimes they outsource everything and then sometimes they bring it all in-house. So, it keeps everyone on their toes!*

These human capital networks can also produce resilience and innovation. Here a respondent recalled the way that the creative and design community responded to the redundancy of half the Hewlett Packard European research lab in Bristol in 2008, which lead to reemployment or new start-ups.

> *What was really nice was the community strongly came together to say, 'We don't want this talent to leave the area. What do you need to help set yourself up as an independent, find other jobs? What can we do to hold you in this area?'*

Alongside the many positive aspects of the ecosystem our research found evidence of two challenges, identified in the McKinsey Report, that could create problems for future development. Many respondents felt that the identity of the region as a vibrant and successful design cluster was weak. They considered that, apart from the beacon companies, there was low awareness among people outside the region. This could have an impact on attracting investment, developing new markets and being heard by local and national government. People were also concerned about aspects of the infrastructure which created problems for activity and could damage competitiveness.

CASE STUDY: BUROHAPPOLD

Bath-based engineering consultancy Burohappold, was founded in 1976 when Ted Happold, engineer on the Pompidou Centre and Sydney Opera House, had a vision to create a degree in Architectural Engineering that combined both subjects. During the early stages of their course, architects and engineers were trained side by side. The University of Bath offered Happold a position of Chair of Building Engineering. Happold moved to Bath to set up his new practice, BuroHappold. Professor Sir Ted Happold died in 1996. The company now operates across 23 countries. It employs 1,800 people, 350 of whom are based in Bath, making the company one of the largest employers in the city.

BuroHappold designs buildings, urban environments, transit hubs, city districts and entire cities. In London, BuroHappold has engineered iconic buildings such as the Millennium Dome (now the 02), the Globe Theatre and the Queen Elizabeth II Great Court at The British Library.

CASE STUDY: AMALGAM MODELMAKING

Since 1984, Amalgam have been providing model making services to Architects such as Foster + Partners & Zaha Hadid, marine models to both the super yacht industry and defence contractors, prop-making and scenic work for Aardman, the BBC, product prototyping for Dyson, Rolls Royce. They also design, build and install exhibitions and interactives for a range of visitor centres, museums and science centres. The process of making a physical model, which looks and acts like a finished item, offers a vital stage in the design process for many industries; revealing unforeseen problems and preventing expensive mistakes later on.

Over the past three decades the company has seen a growth of regional clients working in new technology industries, film and animation, these are benefitting from investment through the Bristol and Bath Science Park, and Bristol City Council.

The Bristol and Bath Design Ecosystem

How can ecosystems be supported?

>> *Design Ecosystem*

What could policy makers, local authorities, LEPs, investors, universities and other creative economy stakeholders do if they wanted to support a strong design industry in their regions? What are the conditions that allow a design sector to flourish?

We argue that our approach and our evidence can support:

+ policy in its need to understand precisely the operation and functions of an ecosystem if it is to support its success.
+ designers and creatives within these networks to be able to identify and understand their own position and impact.

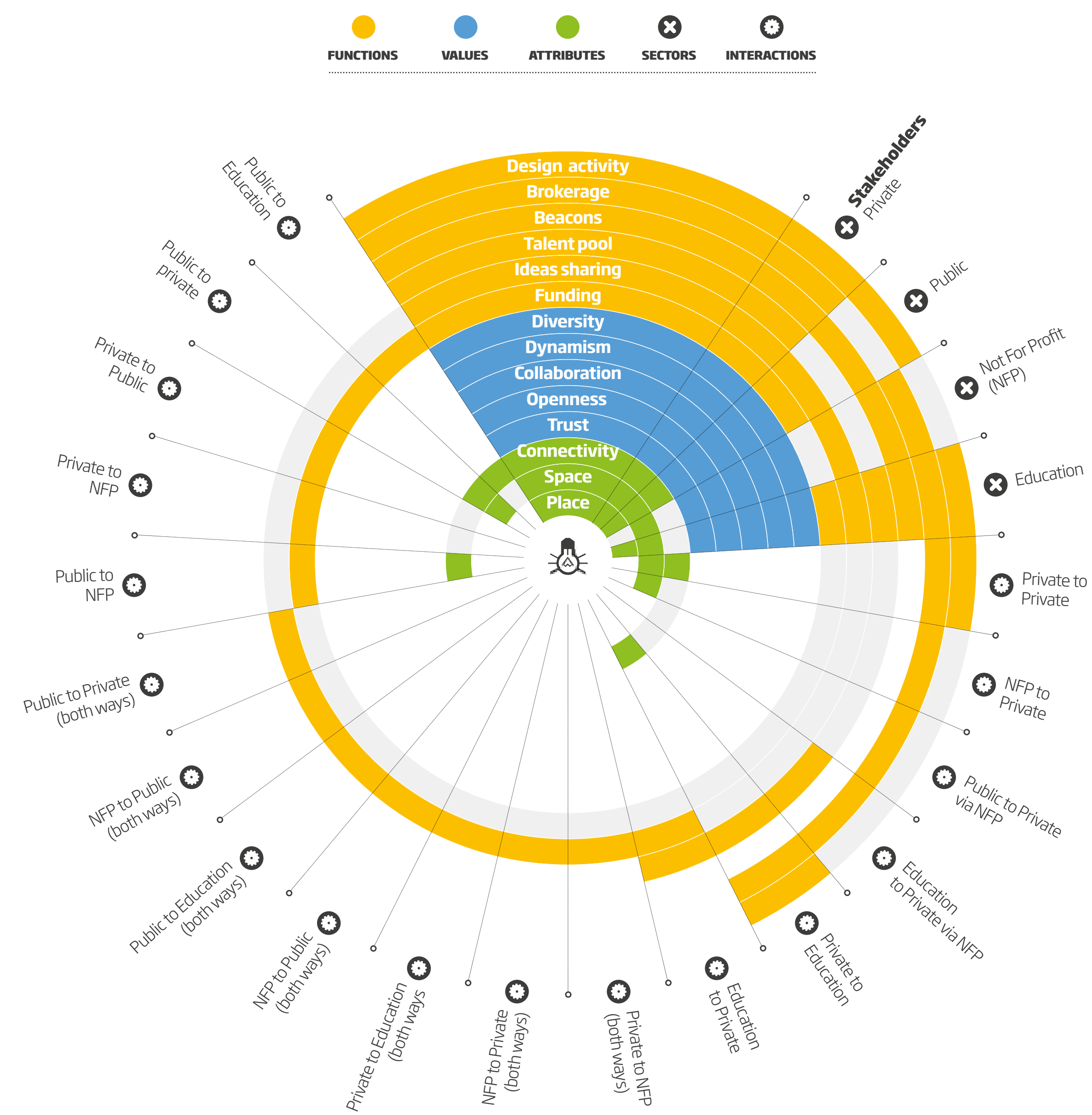
To realize design potential we have to understand the design world. From our evidence we argue for an 'ecosystem' approach that is based on the evaluative concepts of the 'cluster' but also takes into account the the values and relationships that constitute the particular networks and communities of the design industry. Such an approach may help us to know what the parameters are that drive the design industries' emergence, sustainability, resilience and productivity.

However, it is necessary to sound more than a note, a massive sonic blast, of caution. There is no cookie cutter, off-the-shelf solution to forming a successful design sector. Each place and region will have its own talents, strengths, and weaknesses, its own 'beacons' and qualities that are specific to it. What works in the West will not work in Scotland in South Wales or on Merseyside. Nevertheless by thinking about the relationships, qualities, values and exchanges that constitute a design ecosystem we aim to elaborate some principles for further success in our own and other regions.

Design Ecosystem

The ecosystem is formed of private individuals and companies, the public sector, not-for-profit companies and the education sector. There are differences in the ways the stakeholders function and the attributes they have influence over, however values of openness, trust and collaboration, and the need for dynamism and diversity are shared.

Design activity in the region is supported by a complex set of interactions between all stakeholders; exchanging ideas and experiences, providing funding and brokering connections between designers, clients and collaborators.



Design activity

Brokerage Connecting designers to clients, third parties and collaborators

Beacons Attract students, designers and clients and Identify region as place for design

Talent pool Provision and training of talent

Ideas sharing

Funding Providers for design-related activities

Diversity Diverse skills and markets create sustainability

Dynamism Growth of new companies as others decline creates resilience

Collaboration New ventures and innovation

Openness New ideas and sharing of ideas and experience

Trust Face to face meetings are important

Connectivity Good intra and inter city transport links, fast internet connection

Space Affordable office and studio space. Co-working space encourages collaboration

Place Walkable scale of cities with cultural and social spaces offers designers desirable lifestyle

Essential Elements of the Design Ecosystem

CO-CREATION
At the heart of the ecosystem we find processes of value co-creation based in collaboration, and the exchange of knowledge between the various agents as shown in the Enterprise Images. Design is a social business that has problem solving communication at its heart therefore collaboration is fundamental to design. Design value is co-produced by different actors in the client / user / design / manufacture constellation.

SECTORS
These processes of exchange flow between four different types of organization or agencies. First and foremost the private firms engaged in design enterprise. Second, the not-for-profits that produce professional networks and hubs or studios where creatives can co-locate. Third, higher education institutions that are highly porous, producing a vibrant flow of expertise and talent. This flow operates at the level of the talent pipeline where many young creatives find their first jobs through tutor-brokered placements or connections, but also operates through research and development knowledge exchange collaborations. Finally, local authorities (especially Planning Departments and Economic Development Units or Partnerships) are also key agents in a regional design ecosystem given their role in relation to property and regional industrial policy.

The success of the interactions between these kinds of 'organisms' in the ecosystem is subject to two different orders of environmental influence. First of all the beliefs and values that constitute the culture of the ecosystem. Secondly the physical and material attributes of a particular city or region.

VALUES
The culture of the Bristol and Bath design ecosystem is characterized by these values and beliefs:

+ Generosity of knowledge exchange is a frequently cited feature of the ecosystem; people in the thriving micro business and SME milieu understand they do better by sharing than protecting.
+ Openness toward new ideas and processes.
+ Trust in creative partnerships.
+ Dynamism in relation to starting up and closing down companies, characteristic of an independent attitude that supports innovation and invention. Jobs, projects and enterprises have their own life cycle. Over time this dynamism creates resilience in the ecosystem, a confidence that as one project or studio moves on another will be produced, offering some continuity to the freelance workforce.
+ Diversity in markets and in cross-disciplinary talents. From the single designer through to the global industry, from the model maker to the aircraft design pipeline there is a very wide range of design experience, skills and talents that the ecosystem can draw upon. This diversity is the heart of a healthy ecosystem because it affords and necessitates the exchange of a wide variety of values within the population. They are interdependent.
+ Attachment to quality of life and well being values such as a rich cultural mix, many of which are also to do with place.

ATTRIBUTES
The physical and material attribute of the region are the second order of environmental factors that determine the quality of the design ecosystem:

+ Quality of life attributes: attractive physical surroundings, "walkable' cities that are bike friendly, a human pace of life, and access to the countryside.
+ The scale of the region, not too big and not too small, means that designers can operate in the right size networks where linkages from neighbourhood to region are a commonplace feature of professional worlds.
+ A good supply of affordable co-location working spaces and creative studio spaces in post-industrial properties.
+ A multitude of social spaces for designers to encounter one another promoting an ease of formal and informal face-to-face interaction
+ Comparative ease of access to the major national market and national talent pool.
+ Beacon attractors. The region has a small number of high profile brands that are design led. Aardman, Dyson, Renishaw, Hewlett Packard are all, for instance, global brands in their fields that attract talent to work in the region. Beacon attractors create and sustain a creative workforce that becomes increasingly mobile between sectors as the design ecosystem matures.

CASE STUDY: THE BBC NATURAL HISTORY UNIT

The Natural History Unit was founded in Bristol in 1957 and after the success of the series Life on Earth in 1979 it was given departmental status. In 1994 changes to BBC methods of procurement of content led to a cluster of TV and film-related companies setting up close to the Unit. The Unit has gained both worldwide reputation and has been in the forefront of technical advances in filming. It works with the technology industry, experimenting and adapting the latest innovations. The unit has pioneered time-lapse and thermal-imaging, slow-motion filming, 4 - 5K high speed camera technology. Wendy Darke, on her appointment as Head of the Unit in 2012, said:
'In terms of the culture that's developed, the expertise here, there is nowhere in the world that has such a high concentration of talented wildlife camera people, programme producers or researchers. It really is the epicentre of the industry.'

In April 2016 Wendy Darke left the BBC to set up her own film production company in Bristol.

CASE STUDY: WEST OF ENGLAND AEROSPACE FORUM AND THE NATIONAL AEROSPACE TECHNOLOGY PROGRAMME

As markets and technologies in the Aerospace industry change, the private and public sector are working with a not-for-profit organisation to ensure that aerospace manufacturing is retained in the region. The National Aerospace Technology Programme (NATEP) aims to encourage innovation and growth in regional small and medium sized companies. The programme is funded by the Government through the Advanced Supply Chain Initiative (ASCI) and has been delivered in partnership with the regional trade association, the West of England Aerospace Forum (WEAF).

SMEs are funded to nurture new products and technologies to become commercially viable. WEAF assists SMEs to gain access to clients higher-up in the supply chain, so that a product can be developed, licensed or sold. This intervention is important in an industry where small manufactures are competing on a global scale, which may take ten years for a new product to be taken-up by an aerospace company. The region's SMEs need to innovate to remain competitive. Design is at the fore-font of this change, as a WEAF representative explains: [A company] might have been building a particular widget for years, and thought, 'Actually, if we made the widget like this, it could be ten per cent lighter' and, aerospace loves things to be lightweight. So, 'I can make you exactly the same thing but it's lighter', you've got the business. So then they'll have done that and then they open a design team. And then they'll be known more for their design kind of stuff than rather than for just build to print…They move up the food chain, rather than just being the build to print people at the bottom.

I think the notion of design is key and is fascinating. And it's the best of humanity. The idea that you look at the world, you analyse it to find a problem, and then you come up with a solution to that. That's just what humanity's good at… And I think that there's just not that many of us get to do that now. But all of the greatest achievements of our species have been design solutions.

– Furniture Designer, Bath

Conclusion

Unlocking the potential of the creative economy involves promoting the overall creativity of societies, affirming the distinctive identity of the places where it flourishes and clusters, improving the quality of life where it exists, enhancing local image and prestige and strengthening the resources for imagining diverse new futures (UNESCO, 2013, 15).

Objective

Our brief was to understand and articulate the economic and cultural value of the design led sector in the Bristol and Bath region using qualitative and quantitative analysis.

Why is this important?

While there have been numerous studies published on the value and significance of the United Kingdom's creative and high-tech industries over the last two decades, there have been decidedly fewer focused specifically on design, especially at the city or regional level.

We have found:

1 Design-led companies located in the Bristol and Bath region have higher average levels of productivity than those located elsewhere. They were 14% more productive than the average small non-design company and 3% more productive than average small design-led companies across England and Wales. Also, according to our analysis, in 2012, Design-led companies based in the region had significantly higher turnover than the average design companies elsewhere in England and Wales.

2 Statistical methods currently used to measure the economic value of the creative industries do not include SMEs and micro businesses. The real economic value of design may be hidden. Equally the concept of 'design' as posited by the project is also hidden within the 'creative industries' or the 'creative economy's statistics and appears to be proxy for 'graphic design'. We conclude that current methods are unable to measure the types of economic and cultural value accruing from design activities. Combining limited quantitative data analysis with qualitative data collection has provided deeper insights into design in the region.

3 Design is integral to commercial activity in the region in its role as a process for creativity, innovation and problem solving, as means of communication, and in the value it adds to the experience of the consumer. Designers and design companies are not creating goods and services in isolation, but are working in relationship with international, regional and non-regional companies and individuals to co-create economic and cultural value. Design in the region is diverse in terms of the activity and the markets it caters for/works in. However, designers across all the disciplines have a common understanding of design and that 'design is a way of thinking and problem solving'. This unites the designers across different design sectors.

4 Microbusinesses and start-ups constitute a large part of the design economy in the region. These creative micro businesses are frequently dismissed as 'lifestyle' businesses because they don't fit the conventional high tech, high growth template. We have found that these businesses constitute a creative, skilled, flexible labour force that matches the needs of larger organisations. They are important for present and future success and productivity in the region. Their value is hidden but so are they in terms of accessing and engaging with business support initiatives.

5 Across all sectors, designers cited the regional network of flexible, highly-skilled companies and individuals that can be relied upon to deliver a project, as well as a strong community of people that are open to ideas and ventures, as key reasons for success and for remaining in the region.

6 The scale, context and environment of the city-region are critically important, especially in relation to the quality of life it affords. Bristol has been a popular destination for the relocation of creative industry sector businesses over the last decade; 60% of businesses in our data that had relocated to the Bristol area came from London. Social capital in the sub-region is key, with the creative industries sector being driven by 'dense networks of informal contact', making the city-region context very important to the competitiveness of the sector and to the success of the ecosystem.

7 Our design ecosystem demonstrates that while private companies and freelancers are the primary part the ecosystem, public bodies and organisations play an important role in facilitating and supporting the design sector. These are: universities, public sector, and not-for-profit agencies. They are essential for providing funding and space, sharing experiences and ideas, for connecting designers with collaborators and clients, for giving a voice to the community, for contributing to the talent pool and as beacons to promote and attract designers to the region.

8 Although design activity is diverse, there is very little diversity (social, ethnic, cultural) among the designers. The fruitful exchange of information and ideas face-to-face and through various networks, the building of trust within and across sectors in the ecosystem is facilitated by shared social and cultural capital among participants. A majority of the creative businesses located in the sub-region have always been there. Friends and family are cited as central to a large proportion of commercial activity. Strong social networks and local ties can be a barrier to developing new relationships outside this space. This could limit innovation, narrow vision, aspiration and understanding, and access to new and changing markets. Expanding networks to include new knowledge, ideas and experiences could be crucial.

9 The history of design in the region matters. The way the region has evolved, its key industries and people, the impact of historical events, private investment and political economic strategies are all part of how clusters of activity have arisen and of how a tradition of resilience, innovation and adaptation has been built. The history of the region's economy is one in which large-scale industrial enterprises and small-scale artisan and craft industries can co-exist and even interact. We conclude that understanding a place's uniqueness through its social, cultural and political history is invaluable in understanding its present and supporting its future.

10 The problems encountered in this study have led to important understandings about design in the region and to innovative research methods. We are convinced of the importance to all stakeholders of accurate and ongoing mapping of design activity; and of the use of Enterprise Imaging as a way of generating knowledge for both participants and researchers.

Limitations of the study and problems we encountered

We knew from the start that ONS data could provide only a partial picture, thus highlighting the inconvenient truth that this traditional method of data-collection does not include the small companies who contribute so much to design activity in the region. This meant that the qualitative aspect of the study became much more important. Issues of identifying representative sources of information, negotiating access, achieving good rates of participation all had to be faced, in the context of limited time and resource.

We relied on our research partners' networks for our initial attempt to find individuals willing to participate in the online survey. The response to this was disappointing. We then had to identify individuals and businesses willing to take-part in in-depth interviews and focus groups. The data collected in the study is inevitably from individuals motivated to take part and in some cases self-selecting. Triangulating data from all sources reveals a strong unanimity of response. This may mean that the information we have is reliable. Equally it may indicate that our sample of respondents is not representative. We do not know if the views and experiences of a 'silent majority' would differ from our findings.

It was this that led to us undertaking the huge challenge of mapping the region more accurately and comprehensively. Research into, for example choices behind and the impact of location will be facilitated by this. It will also make the region more visible to itself.

The study also limited its data sources to the designers, or those closely linked to design. The Enterprise Images were constructed from the point of view of the designer and not of the client. The client/customer perspective could enhance understanding of crucial elements in the process.

Our definition of 'design' was deliberately broad. This created a challenge in explaining the project to potential participants and interested parties. Design is a word, which in everyday use is frequently qualified by an adjective: graphic design, engineering design, product design. It also plays a part in many processes and activities: manufacture, theatre, publishing, film and TV, events, marketing, branding. Our approach confirmed our belief that design is a creative problem solving activity that is embedded in economic and cultural activity. We found that all participants in the research agreed with us. Although this breadth of definition enabled some important understanding, for instance of what micro businesses and huge enterprises shared, it may have been too broad for in-depth understanding of a small aspect of our question. We were able only to scratch the surface.

Design is so integrated, so enmeshed it was difficult to establish a point at which to apply a measuring stick. We found also that designers are less interested in metrics and more concerned with the value, in broad terms, that design created for them, their clients and the consumer.

Questions that have evolved during this project

To what extent is it necessary to quantify the value of design? What is the value for design to the designer and what is the value of design to the client?

Can we come up with creative and practical solutions that can help us in gaining a better understanding of value?

How do you extract the value of each individual's input in a complex process?

The design ecosystem of the region is complex, it works and it is important to the regional and national economy. Who in the network is responsible to provide/co-ordinate the support it needs?

How can you be a successful design company in a region? To do that you have to be a specialist but you have to grow your own people. It's that combination of Bristol lifestyle and attributes, working with taking very talented people from educational establishments and growing your own.

– Design Planner, Bristol

Outcomes of the Project

By employing different methodologies we consider we have gained better and more detailed insights into aspects of design in the Bristol and Bath region that relate to understanding its cultural and economic value

It has been important to us to find ways to make design in the region more coherent and more visible and to make its processes better understood.

To do this we have:

+ Developed an app that maps design activity across the region.
+ Used and developed methods of visualising the data.

Good visual communication provides a strong and powerful conduit for explaining complex information and can bring many stakeholders together towards a common understanding.

Transferable Methodologies

Our aim has been to develop transferable methodologies that can be used as a tool kit that can be adapted to the requirements of the user. We believe they can be used to gain a more measured understanding of a region, or city or company.

Mapping the Territory

The BBxD mapping application enables information about design companies and their location to be available online. It plots where designers work and shows clusters and the range of activity in the region. It shows design in the region to outsiders and reveals it more clearly to its insiders.

In creating the content we checked and quality controlled all the information we already had and then used data mining techniques to locate additional enterprises. Company names, postcodes and website addresses have been found, checked and listed. The app also allows designers to identify themselves and the project will encourage them to do this by promoting the app.

So far there are over 3300 entries. The information can be searched and displayed in different ways.

Enterprise Imaging

This is a valuable and versatile research method, which we adapted for the project. It is applicable to organizations of any size. It is a means of identifying the resources and connections between actors and organisations which enable the co-creation of value.

Enterprise Imaging is doubly useful. During the interview the participant is helped to construct and understand the complex of activity they are involved in.The visual representation enables them and others to see the whole, and identify key factors that affect outcomes.

Importance-Performance Analysis (IPA)

This is a research tool which made it possible for us to consider a number of attributes in relation to their importance to the individual and the region in which they were located. Plotting this visually makes clear expressions of importance relative to performance.

History Timeline

We undertook an in-depth survey of design history in the Bristol and Bath region to date. To identify and understand key events and patterns we created an infographic which can be explored in many different ways and for a range of purposes.

The Design Ecosystem

This infographic provides a model for a visual representation of a complex system.

Recommendations

Our recommendations are grounded in our findings. In particular we focus on the value of design; the identity of design in the region and beyond; the need to sustain and support design.

Recommendation for Immediate Action

One feasible recommendation that would make an immediate impact:

HOLD AN INTERNATIONAL DESIGN FESTIVAL IN THE REGION

This would:

+ Raise the identity of the region as a place for design and demonstrate the quality of the work is of international standing.
+ Serve as a beacon/attractor for designer, design companies and clients.
+ Show the region as a place that has guaranteed expertise, knowledge, innovation and creativity.
+ Be a creative stimulus for design companies who are working here and an opportunity to showcase what they do.
+ Ensure a competitive edge for the Bristol and Bath region when other cities in the UK are hosting design festivals.

It is essential that all stakeholders in the design businesses, not-for-profits, universities, LEPs and local authorities - come together to make this happen.

Longer-term Recommendations

In the medium and long-term we recommend activity that would have wide reaching benefits and sustain design in the region.

QUESTION DEFINITIONS OF GROWTH
To increase the economic value of design across the region there needs to be a recognition that many design companies wish to stay small to remain agile. To grow design in the region it is necessary to think rather about growing the network of designers rather than simply turning SMEs into large companies. Regional and national policy should consider how this might be supported.

DESIGN BEACONS AND AMBASSADORS
Design needs regional champions who will advocate for design and provide a focus for promoting the region's identity. Exemplars of outstanding practice, often overlooked or not publicised, should be identified and ways found to involve them in raising the profile of the region. Universities should be encouraged to be more pro-active and involved in design activity. The high quality of design higher education should be supported to ensure a flow of new talent to the region.

AFFORDABLE SPACE
Provision of affordable, centrally-located creative workspaces is a priority. Allied with this is support for and recognition of the value of social and exhibition spaces in which designers can meet clients and collaborators.

OPEN ACCESS
The industry should consider the openness of its current practices to new and inexperienced arrivals. Design networks should be more visible, open and accessible to a diverse range of designers and clients. The region has good diversity of skills and markets, but there is a lack of cultural diversity in the backgrounds of individual designers. Out-reach to schools and colleges in order to improve the diversity of design professionals needs to be properly co-ordinated and not solely the responsibility of the private or education sector.

BUSINESS SUPPORT
Provision of business support in the form of mentorship schemes delivered by not-for-profit organisations, tax relief, and support for small levels of growth through apprenticeship schemes.

Recommendations

CONNECTIVITY
Central to the delivery of growth is greater connectivity and collaboration among higher education, private, public and not-for-profit organisations. They need to work together to support the design network.

Ensuring high-speed internet and a good transport system to keep designers connected within the region and in contact with the rest of the world.

CO-ORDINATION
Identification of and funding for a way to co-ordinate activity to support and develop design in the region. All agencies in the region need to co-operate in achieving this. There is already good work undertaken by organisations in the region, as demonstrated by West of England Design Forum, Creative Bath, Bristol Media, West of England LEP, and REACT.

CREATE A DESIGN DISTRICT
Identify areas of design activity that can highlight commercial enterprises, can increase business and tourism and enrich an area. Create a coherent image for this and promote it within and beyond the region.

THE ESTABLISHMENT OF DESIGN HUBS
These should provide affordable workspace, educational spaces, social and exhibition spaces. Design hubs would act as beacons for design in the region as well as providing creative stimulation, and network support. They could be an important element in a Design District.

Craneworks initiative in Bath is a concrete case in point that could be supported by a more informed understanding of design value at policy stakeholder level.

CASE STUDY: A DESIGN FESTIVAL (EINDHOVEN)

Dutch Design Week (DDW) was informally established by a design collaborative in 1998, and has now evolved to be the biggest design event in northern Europe, presenting design ***ideas from more than 2500 designers to more than 275,000 visitors from home and abroad. In October each year DDW takes place in Eindhoven, it is centred in the now disused Phillips factory, but is a city-wide event with more than hundred locations across the city. The event is supported by Design Ambassadors including furniture designer*** *Piet Hein Eek who has recently collaborated with Ikea, and Bas van Abel advocate of Fairphone, Fablab and Open Design Now. DDW is sponsored by private, public, not-for-profit, CIC.* ***The mission of the organisers is to create opportunities for designers and encourage a new generation of talent.***

CASE STUDY: A DESIGN DISTRICT (HELSINKI)

The Design District in Helsinki was established in 2005, with the vision to bring together all the creative businesses in the neighbourhood. Today it comprises 4 districts, 25 streets and over 200 units that spans a wide range of creative organisations, showcasing the newly emerging alongside internationally known designers such as Alvar Aalto, Iittala, Marimekko Corporation. It is also home to The Design Museum and Finnish Architecture Museum. The Design Museum contains over 75,000 objects, 45,000 drawings and 125,000 photographs. The Design District is clearly placed on the tourist map, incorporating regular design exhibitions, design walks, show room walks, and late night opening events.


PHOTO
BOOTH

Case Studies of Partners

PARTNER CASE STUDY: WEST OF ENGLAND DESIGN FORUM

The West of England Design Forum (WEDF) is a not-for-profit community interest company (CIC). Since its establishment in 2006, the WEDF has built a network of 3,100 members with backgrounds from product design and graphic design sectors. It has a strong reputation in connecting the design community through design-leading talks, networking events, and practice based projects.

WEDF's mission is to connect creatives by providing opportunities and space to share ideas, collaborate and network. It aims to inspire, champion and share design expertise through practical and professional training; subjects of which include: branding and advertising, photography, copyright and finance. WEDF has delivered more than 50 talks, events and projects, 25 specialised training sessions and 10 large projects.

They are an essential bridge between universities and business. In its sixth year, the Design Buddy scheme connects design students to senior designers, creative directors and agency owners in Bath and Bristol. The scheme offers mentoring and feedback on their work, studio placements and insights into industrial best practice.

WEDF maintains strategic partnerships with D&AD, Design Council, Low Carbon South West, The Design Programme, Laurence King Publishers and Bristol Festival of Ideas.

WEDF's vision is to develop a Design Centre - a space to showcase local design and the hub for all aspects of design and business.

PARTNER CASE STUDY: BRISTOL MEDIA

Formed in 2005, Bristol Media (BM) has over 580 subscribing members and a social media reach of over 30,000 and registered as a community interest company in 2007. It is the creative media network in the region for design activities including animation, VFX, web design, mobile and experience design, film and television

BM provides training workshops, master-classes, lectures and thought-leadership from local industry experts. It co-ordinates the national annual Vision conference - the 6th conference is scheduled for November 2017; and the annual Barometer surveys, which benchmarks business performance, identifies trends, insights, opportunities and threats facing creative companies in Bristol and Bath. In 2015, to celebrate 10 years of media collaboration, BM produced a showcase event, showreel and talent directory.

It links to national bodies through its membership of the Creative Industries Council Cluster group, the Creative Industries Federation, and has strategic partnerships with WEDF and Creative Bath.

BM's vision is to make Bristol the most connected creative community, with the objective to work as a catalyst, connector and supporter of its members.

PARTNER CASE STUDY: CREATIVE BATH

Founded in 2008, Creative Bath (CIC) is the network for creative, tech and cultural businesses, organisations and individuals in the Bath area, with 11,000 followers.

Its diverse membership ranges from film, music, publishing, new media, and theatre backgrounds, to architects, coders, artists, writers, designers, IP lawyers, developers, furniture makers, festivals, SEO specialists, event organisers, engineers, PR, performing arts, and speech coaches. The organisation is partially funded by Bath & North East Somerset Council.

The aim is to bring together the local creative community, to raise the profile of the sector, and work as a link between the creative sector and schools, colleges and universities. Their partners include Bath Spa, Media Clash, The Guild, Bristol Media, and Future Publishing.

Case Studies of Partners

PARTNER CASE STUDY: THE WEST OF ENGLAND LEP

Established by the government initiatives in 2011, the Local Enterprise Partnerships (LEP) fund local enterprise and infrastructure in the region.

The West of England LEP is one of 39 partnerships across the UK. It covers Bristol, Bath & North East Somerset, South Gloucestershire and North Somerset, the first three will form a Mayoral Combined Authority in 2017. Bristol and Bath are listed by NESTA as in the 10 UK creative centres.

Priority sectors in the region as defined by LEP include Creative, Digital, Aerospace and Advanced engineering, Low Carbon and High-Tech are the core of the UK's future economy. Addressing Creative, High-Tech and Low Carbon priority sectors, an example is The Enterprise Zone in Bristol's Temple Quarter. Other successful enterprises include The Engine Shed at Temple Meads, which is a joint venture between Bristol City Council and the University of Bristol and is a key business centre for many businesses including SETsquared.

The LEP draws from a range of income including the Department for Transport, Invest Bristol+Bath, West of England Growth Fund, EU, Arts Council of England, and DigiTech business development programme. This has ongoing benefits on the creative sector for future, for example the forthcoming Bristol Arena, expansion of Engine Shed, and Regional Arts Incubator Network (RAIN).

PARTNER CASE STUDY: REACT

Between 2012 and 2016, REACT was an AHRC funded collaborative project between UWE Bristol and film culture and digital media centre Watershed, along with the Universities of Bath, Bristol, Cardiff and Exeter. It was established as one of four 'Knowledge Exchange Hubs for the Creative Economy' to develop new models, methods and approaches for University/ creative economy collaboration.

REACT developed a network of 700 regional academics and national creative companies. Within this network, it supported 53 collaborative projects featuring 57 creative companies and 73 academics from the arts and humanities with £2.5 million for them to work together on over 25,000 hours of collaborative R&D. They produced 86 new products, 76 new pieces of software, 10 new companies, 43 jobs, 25 academic research articles and over 90 presentations at research conferences. This stimulated over £5.35 million in further investment in our projects, from private investment, sales and commissions, plus additional research grants and £2.23 million in internal and external investment in REACT legacy activities.

REACT is a product of the Bristol and Bath region, and would not have existed in its current form if it weren't for the presence of a few key factors. REACT research shows that these factors are necessary for a creative hub to flourish: a healthy creative economy, long-term relationships between Universities active in the creative economy sector and outward facing, innovative creative organisations; 'third-spaces' that offer neutral ground for collaboration.

It's rich, it's vibrant, I think it's incredibly active. I think it's got fantastic networks. It's got good relationships, very good relationships, and I feel I'm lucky to be part of it. I think it's a very connected city, most of the time. I think there's huge willingness, I think there's a passion for people to share a sense of values and philosophy around wanting to kind of put Bristol and the region on the map.

– Design Consultant, Bath

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Appendix

Name	Definition
BristolAndBath	= 1 if the plant is located in the Bristol and Bath post codes (BS and BA, respectively) and equal to 0 (zero) otherwise.
GVAfc	Gross value added at factor cost per worker in the business unit.
Turnover	IDBR definition of turnover
Employment	The number of workers in the business unit.
Capital	The capital stock of the business unit in constant prices. Source: Richard Harris.
Hi Quals	The proportion of the labour force that have either a first degree, higher degree, NVQ levels 4 and 5, HNC, HND, qualified teacher status, qualified medical doctor, qualified dentist, qualified nurse, midwife or health visitor in the local authority district. Source: Neighbourhood Statistics.
Other Quals	1 minus Hi Quals
Pop Den	The population density in the local authority district. Source: Neighbourhood Statistics.
UK owned Single	=1 if the business unit is a UK-owned single site firm and equal to 0 (zero) otherwise. A control category.
UK owned MNC	=1 if the business unit is a UK-owned multinational and equal to 0 (zero) otherwise.
Overseas Owned	=1 if the business unit is owned by an overseas investor and equal to 0 (zero) otherwise.
AHRCsic	= if the business unit is recorded as operating in the following SIC codes: 13200 - 13299, 17300 - 17399, 17500 - 17599, 18200 - 18299, 19000 - 19099, 20000 - 20099, 21100 - 21199, 22200 - 22299, 22300 - 22399, 24500 - 24599, 25100 - 25199, 26100 - 26199, 28600 - 28699, 28700 - 28799, 31600 - 31699, 30000 - 30099, 29700 - 29799, 31600 - 31699, 29200 - 29299, 39500 - 39599, 34100 - 34199, 34200 - 34299, 35300 - 35399, 35500 - 35599, 36100 - 36199, 36200 - 36299, 36400 - 36499, 36500 - 36599, 36600 - 36699, 40100 - 40199, 41000 - 41099, 74200 - 74299, 45200 - 45299, 54300 - 54399, 45400 - 45499, 45200 - 45299, 50200 - 50299, 51100 - 51199, 51400 - 51499, 51700 - 51799, 52100 - 52199, 52400 - 52499, 52600 - 52699, 22100 - 22199, 72200 - 72299, 92100 - 92199, 92300 - 92399, 92200 - 92299, 64200 - 64299, 72200 - 72299, 72300 - 72399, 72600 - 72699, 65100 - 65199, 65200 - 65299, 66000 - 66099, 70100 - 70199, 74100 - 74199, 74200 - 74299, 73100 - 73199, 74400 - 74499, 74800 - 74899, 74200 - 74299, 75200 - 75299, 80200 - 80299, 80300 - 80399, 80400 - 80499, 85100 - 85199, 85300 - 85399, 92300 - 92399, 92500 - 92599, 92600 - 92699, 92700 - 92799, 91100 - 91199, 91300 - 91399 and 93000 - 93099, and equal to 0 (zero) otherwise.
AHRCsic BandB	= 1 if AHRCsic =1 and if the plant is located in the BS or BA postcode areas and equal to 0 (zero) otherwise.
AHRCsicDC	= 1 if the plant operates within the AHRCsic codes or within the following SIC codes identified by the Design Council as also being design-related plants: 17200 - 17299, 18300 - 18399, 26200 - 26299, 26600 - 26699, 27400 - 27499 or 36300 - 36399 and equal to 0 (zero) otherwise.
AHRCsicDC BandB	= 1 if AHRCsicDC =1 and if the plant is located in the BS or BA postcode areas, and equal to 0 (zero) otherwise.
Mfd	= 1 if there is more than one plant in the business (a multi-plant dummy).
livelu	The number of plants which make up the business unit.

Notes: all variables that are continuous are estimated in natural logarithms. Unless otherwise stated, the dataset source is the ABS. Source: ONS.

Table A2: productivity including AHRCsicS

	Including all firms			Single-plant firms only		
	2012		2009	2012		2009
	1	2	3	4	5	6
n	181,916	181,916	137,934	22,506	22,506	18,672
Bristol & Bath	-0.055 (0.020)***	-0.060 (0.020)***	-0.017 (0.027)	-0.054 (0.053)	-0.056 (0.055)	0.168 (0.065)***
Rest of England and Wales	Control variable			Control variable		
Ln(Employment)	0.258 (0.003)***	0.258 (0.003)***	0.220 (0.004)***	0.878 (0.007)***	0.878 (0.007)***	0.883 (0.009)***
Ln(capital stock)	0.143 (0.002)***	0.143 (0.002)***	0.186 (0.002)***	0.082 (0.005)***	0.082 (0.005)***	0.111 (0.007)***
Ln(High qualifications)	-0.009 (0.013)	-0.009 (0.013)	0.009 (0.016)	0.300 (0.033)***	0.300 (0.033)***	0.426 (0.036)***
Other qualifications	Control variable			Control variable		
Ln(population density)	0.015 (0.002)***	0.015 (0.002)***	0.019 (0.003)***	0.052 (0.006)***	0.052 (0.006)***	0.034 (0.007)***
UK owned single plant	Control variable			Control variable		
UK owned MNC	1.927 (0.013)***	1.927 (0.013)***	2.229 (0.016)***	0.674 (0.028)***	0.674 (0.028)***	0.473 (0.030)***
Overseas owned	2.435 (0.014)***	2.435 (0.014)***	2.666 (0.017)***	1.185 (0.044)***	1.185 (0.044)***	0.755 (0.046)***
AHRCsic	-0.257 (0.017)***	-0.261 (0.018)***	-0.563 (0.023)***	0.100 (0.034)***	0.099 (0.035)***	-0.023 (0.044)
AHRCsic * Bristol & Bath	-	0.142 (0.109)	0.214 (0.135)	-	0.033 (0.227)	-0.017 (0.277)
Multi-plant	3.496 (0.013)***	3.496 (0.013)***	3.696 (0.016)***	-	-	-
Ln(livelu)	0.002 (0.000)***	0.002 (0.000)***	0.001 (0.000)***	-	-	-
F	61,480***	55,892***	31,406***	5,729***	5,092***	4,277***
R^2	0.772	0.772	0.715	0.671	0.671	0.674

Table A3: productivity including AHRCsicS Including Design Council's extension

	Single-plant firms only			Single-plant firms only		
	2012		2009	2012		2009
	1	2	3	4	5	6
n	181,916	181,916	137,934	22,506	22,506	18,672
Bristol & Bath	-0.055 (0.020)***	-0.061 (0.020)***	-0.019 (0.027)	-0.055 (0.053)	-0.055 (0.055)	0.167 (0.065)**
Rest of England and Wales	Control variable			Control variable		
Ln(Employment)	0.258 (0.003)***	0.258 (0.003)***	0.221 (0.004)***	0.868 (0.007)***	0.868 (0.007)***	0.883 (0.009)***
Ln(capital stock)	0.143 (0.002)***	0.143 (0.002)***	0.186 (0.002)***	0.082 (0.005)***	0.082 (0.005)***	0.111 (0.007)***
Ln(High qualifications)	-0.009 (0.013)	-0.009 (0.013)	0.008 (0.016)	0.301 (0.033)***	0.301 (0.033)***	0.426 (0.036)***
Other qualifications	Control variable			Control variable		
Ln(population density)	0.015 (0.002)***	0.014 (0.002)***	0.019 (0.003)***	0.052 (0.006)***	0.052 (0.006)***	0.034 (0.007)***
UK owned single plant	Control variable			Control variable		
UK owned MNC	1.928 (0.013)***	1.928 (0.013)***	2.229 (0.016)***	0.674 (0.028)***	0.674 (0.028)***	0.473 (0.030)***
Overseas owned	2.436 (0.014)***	2.436 (0.014)***	2.668 (0.017)***	1.183 (0.044)***	1.183 (0.044)***	0.756 (0.046)***
AHRCsicDC	-0.269 (0.017)***	-0.272 (0.017)***	-0.579 (0.022)***	0.106 (0.033)***	0.106 (0.033)***	-0.027 (0.042)
AHRCsicDC * BandB	-	0.148 (0.106)	0.246 (0.131)*	-	0.007 (0.213)	0.010 (0.258)
Multi-plant	3.494 (0.013)***	3.494 (0.013)***	3.693 (0.016)***	-	-	-
Ln(livelu)	0.002 (0.000)***	0.002 (0.000)***	0.001 (0.000)***	-	-	-
F	61,493***	55,903***	31,424***	5,729***	5,093***	4,276***
R^2	0.772	0.772	0.715	0.671	0.671	0.674

Notes: The dependent variable is the natural logarithm of GVAfc. Continuous independent variables are also expressed in natural logarithms (Ln). Intercept estimates omitted. ***, ** and * signify statistical significance at the 1%, 5% and 10% confidence levels respectively. Source: Authors' estimates based on ABS database.

Appendix

Table A4: turnover including AHRCsicS

	Including all firms			Single-plant firms only		
	2012		2009	2012		2009
	1	2	3	4	5	6
n	1,652,656	1,652,656	1,055,587	1,395,237	1,395,237	864,735
Bristol & Bath	-0.055 (0.006)***	-0.058 (0.006)***	0.002 (0.009)	-0.054 (0.006)***	-0.055 (0.006)***	0.009 (0.007)
Rest of England and Wales	Control variable			Control variable		
Ln(Employment)	0.811 (0.001)***	0.811 (0.001)***	0.760 (0.002)***	0.955 (0.001)***	0.955 (0.001)***	0.924 (0.001)***
Ln(capital stock)	0.006 (0.000)***	0.006 (0.000)***	0.035 (0.001)***	-0.003 (0.001)***	-0.003 (0.001)***	0.025 (0.001)***
Ln(High qualifications)	0.008 (0.003)***	0.008 (0.004)***	-0.015 (0.005)***	0.102 (0.003)***	0.102 (0.003)***	0.116 (0.004)***
Other qualifications	Control variable			Control variable		
Ln(population density)	0.031 (0.000)***	0.031 (0.000)***	0.036 (0.001)***	0.033 (0.001)***	0.033 (0.001)***	0.040 (0.001)***
UK owned single plant	Control variable			Control variable		
UK owned MNC	1.441 (0.004)***	1.441 (0.004)***	1.756 (0.005)***	0.601 (0.004)***	0.601 (0.004)***	0.561 (0.005)***
Overseas owned	2.362 (0.006)***	2.362 (0.006)***	2.564 (0.008)***	1.255 (0.010)***	1.255 (0.010)***	1.173 (0.011)***
AHRCsicS	-0.037 (0.004)***	-0.038 (0.004)***	-0.052 (0.005)***	-0.001 (0.004)	-0.001 (0.004)	0.027 (0.004)***
AHRCsicS * Bristol & Bath	-	0.043 (0.025)*	0.120 (0.033)***	-	0.026 (0.022)	0.089 (0.027)***
Multi-plant	2.775 (0.004)***	2.775 (0.004)***	2.851 (0.005)***	-	-	-
Ln(livelu)	0.002 (0.000)***	0.002 (0.000)***	0.001 (0.000)***	-	-	-
F	99,999***	99,999***	99,999***	99,999***	99,999***	93,245***
R^2	0.806	0.806	0.788	0.462	0.462	0.493

Table A5: turnover including AHRCsic Including Design Council's extension

	Including all firms			Single-plant firms only		
	2012		2009	2012		2009
	1	2	3	4	5	6
n	1,652,656	1,652,656	1,055,587	1,395,237	1,395,237	864,735
Bristol & Bath	-0.055 (0.006)***	-0.058 (0.006)***	0.002 (0.009)	-0.054 (0.006)***	-0.055 (0.006)***	0.009 (0.007)
Rest of England and Wales	Control variable			Control variable		
Ln(Employment)	0.811 (0.001)***	0.811 (0.001)***	0.760 (0.002)***	0.955 (0.001)***	0.955 (0.001)***	0.924 (0.001)***
Ln(Capital stock)	0.006 (0.000)***	0.006 (0.000)***	0.035 (0.001)***	-0.003 (0.001)***	-0.003 (0.001)***	0.025 (0.001)***
Ln(High qualifications)	0.008 (0.003)***	0.008 (0.004)***	-0.015 (0.005)***	0.102 (0.003)***	0.102 (0.003)***	0.116 (0.004)***
Other qualifications	Control variable			Control variable		
Ln(Population density)	0.031 (0.000)***	0.031 (0.000)***	0.036 (0.001)***	0.033 (0.001)***	0.033 (0.001)***	0.040 (0.001)***
UK owned single plant	Control variable			Control variable		
UK owned MNC	1.441 (0.004)***	1.441 (0.004)***	1.756 (0.005)***	0.601 (0.004)***	0.601 (0.004)***	0.561 (0.005)***
Overseas owned	2.362 (0.006)***	2.362 (0.006)***	2.564 (0.008)***	1.255 (0.010)***	1.255 (0.010)***	1.173 (0.011)***
AHRCsicDC	-0.037 (0.004)***	-0.038 (0.004)***	-0.059 (0.005)***	-0.001 (0.004)	-0.001 (0.004)	0.027 (0.004)***
AHRCsicDC * Bristol & Bath	-	0.043 (0.025)*	0.118 (0.032)***	-	0.022 (0.022)	0.081 (0.027)***
Multi-plant	2.775 (0.004)***	2.775 (0.004)***	2.851 (0.005)***	-	-	-
Ln(livelu)	0.002 (0.000)***	0.002 (0.000)***	0.001 (0.000)***	-	-	-
F	99,999***	99,999***	99,999***	99,999***	99,999***	93,246***
R2	0.806	0.806	0.788	0.462	0.462	0.493

Notes: The dependent variable is the natural logarithm of turnover. Continuous independent variables are also expressed in natural logarithms (Ln). Intercept estimates omitted. ***, ** and * signify statistical significance at the 1%, 5% and 10% confidence levels respectively. Source: Authors' estimates based on ABS database.

Credits

This report is located in and draws on an extensive literature review. This edition references only major sources and provides only an indicative bibliography. A fully referenced version can be found on the BBxD web-site.

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